This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

600061287T

A
CONCISE AND PRACTICAL TREATISE
ON THE
PRINCIPAL DISEASES
OF THE
AIR-PASSAGES, LUNGS, AND PLEURA.

BY

ALFRED CATHERWOOD, M.D. C.M.

MEMBER OF THE BRITISH MEDICAL ASSOCIATION; LATE SENIOR ACTING PHYSICIAN
TO THE LONDON DISPENSARY FOR DISEASES OF THE HEART AND LUNGS, &C.;
AND LECTURER ON MATERIA MEDICA AND THERAPEUTICS AT THE
ROYAL FREE HOSPITAL, &C. &C. &C.

Ἰητρὸς γὰρ ἀνὴρ πολλῶν ἀντάξιος ἄλλων. — HOMER.

LONDON:
DUNCAN AND MALCOLM,
37 PATERNOSTER ROW.

M.DCCC.XLI.

1138.

LONDON:
PRINTED BY MOYES AND BARCLAY, CASTLE STREET,
LEICESTER SQUARE.

BIBLIOTHECA BODLEIANA

TO

ROBERT DUNDAS THOMSON, Esq. M.D.

This Work

IS RESPECTFULLY DEDICATED,

AS A TRIBUTE OF

SINCERE PERSONAL ESTEEM,

BY HIS FAITHFUL FRIEND AND HUMBLE SERVANT,

A. CATHERWOOD.

PREFACE.

A CONCISE treatise on the principal diseases of the Air-passages, Lungs, and Pleura, has been long considered a great desideratum. To stop, therefore, this gap in the medical literature of the country, I have taken up my pen, and trust that my labour will not be deemed by the profession, and the public generally, as wholly misspent.

In carrying out this design, I have endeavoured, in every instance, to adapt the language to the comprehension of the non-medical reader, and, as far as possible, to arrange the various subjects, so that they may be most easily understood, compared, and referred to.

In some few instances it will be seen that I differ in opinion from the distinguished inventor of the art of auscultation, in reference to the value of certain local signs as a means of diagnosis; and it will be also observed, that I consider Läennec's explanation of the phenomenon of bronchophony as totally incorrect.

When speaking of the remedies suitable for each disease, I have thought it advisable to append a few formulæ, being fully convinced of their great practical importance.

21 *Charles Square*, *Hoxton*,
October 1*st*, 1841.

CONTENTS.

PART FIRST.

DISEASES OF THE AIR-PASSAGES.

CHAPTER I.

CATARRH.

PAGE

Definition.—Divisions into, 1. Acute Mucous Catarrh; 2. Chronic Mucous Catarrh; 3. Acute Pituitous Catarrh; 4. Chronic Pituitous Catarrh; 5. Dry Catarrh; 6. Whooping-Cough, or Spasmodic Catarrh.

Acute Mucous Catarrh, Frequency of—Anatomical Characters—General, Functional, and Local Signs—External Causes: Cold, Moisture with Cold, Miasm, Noxious Gases, Impalpable Powders—Predisponent Causes—Treatment: Hot Spirits and Water, Vapour Bath, Emetics, Purgatives, Diaphoretics, Expectorants, General and Topical Blood-letting, Vesicatories, Mercury—Diet 1

CHAPTER II.

CHRONIC MUCOUS CATARRH.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Treatment: Leeches, Blisters, Setons and Issues, Moxas, Stimulat-

PAGE

ing Ointments, Oils, and Plasters, Emetics, Expectorants, Tonics, and Astringents, Inhalation of Dilute Chlorine—Diet, &c. 32

CHAPTER III.

ACUTE PITUITOUS CATARRH.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Treatment 45

CHAPTER IV.

CHRONIC PITUITOUS CATARRH.

General Observations—Treatment 48

CHAPTER V.

DRY CATARRH.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Treatment...... 50

CHAPTER VI.

WHOOPING-COUGH; OR, SPASMODIC CATARRH.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Treatment: Blood-letting, Counter-irritants, Emetics, Narcotics, Tonics, and Antispasmodics—Change of Air—Diet, &c. 55

CHAPTER VII.

CROUP.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Age—Causes—Treatment: Blood-letting, Mercury, Blisters, Emetics, Nitrate of Silver, Tracheotomy—Diet, &c. 65

PART SECOND.

DISEASES OF THE LUNGS.

CHAPTER I.

PERIPNEUMONY.

PAGE

Preliminary Observations — Anatomical Characters; 1st Stage, Engorgement; 2d Stage, Hepatization Rouge; 3d Stage, Hepatization Grise; 4th Stage, Abscess of the Lung — Duration of Peripneumony — Resolution of Peripneumony — Part of the Lung most frequently Affected — State of the Bronchial Tubes — General, Functional, and Local Signs — External Causes of Peripneumony — Age — Temperament — Treatment: Blood-letting, Blisters, &c., Calomel and Opium, Potassio-tartrate of Antimony, Digitalis, Mercury — Diet, &c. 75

CHAPTER II.

GANGRENE OF THE LUNGS.

Preliminary Observations — Anatomical Characters: Circumscribed Gangrene; α. Gangrenous Eschar; β. Deliquescent Sphacelus; γ. Gangrenous Excavation: Non-circumscribed Gangrene — General, Functional, and Local Signs — Treatment 106

CHAPTER III.

EMPHYSEMA OF THE LUNGS.

Preliminary Observations — Anatomical Characters — 1. Vesicular Emphysema; 2. Interlobular Emphysema — General, Functional, and Local Signs — Causes — Treatment 111

CHAPTER IV.

ŒDEMA OF THE LUNGS.

PAGE
Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs—Causes: Eruptive Diseases, Contraction of the Heart's Aortic Opening, and some other Heart Affections; Diseases of the Kidneys, Diseases of the Liver and Spleen, Compression of large Venous Trunks, Inflammation of the Cellular Membrane, Debility—Treatment—Diet, &c. 117

CHAPTER V.

APOPLEXY OF THE LUNGS.

Definition—Anatomical Characters—General, Functional, and Local Signs — Common Causes — Predisponent Causes—Treatment—Diet, &c. 135

CHAPTER VI.

ASTHMA.

Definition—Dry Asthma, Humid Asthma, Spasmodic Asthma, Nervous Asthma—Treatment, &c. 142

CHAPTER VII.

PULMONARY CONSUMPTION.

Preliminary Observations—Anatomical Characters, Susceptibility of various Organs to Tubercle—Duration of the Disease—Age—What Part of the Lungs is first Involved in the Disease?—General, Functional, and Local Signs—Causes, Proximate, Predisponent, and Common Exciting Causes—Does Peripneumony ever give rise to Phthisis?—Is Phthisis Contagious?—Is Consumption Curable?—Treatment—Is it right to Check Diarrhœa in the latter Stage of Phthisis?—Diet—Change of Climate.......................... 144

PART THIRD.

DISEASES OF THE PLEURA.

CHAPTER I.

ACUTE PLEURISY.

PAGE

Anatomical Characters: False Membranes, Membranous Bands, Fibro-Cartilage, Gangrene of the Pleura—General, Functional, and Local Signs—Double Pleurisy—Occasional Causes—Predisponent Causes—Treatment—Diet 179

CHAPTER II.

PLEURO-PERIPNEUMONY.

Pleuro-Peripneumony, Varieties of—1. Peripneumony complicated with a slight Pleurisy; 2. Pleurisy complicated with a slight Peripneumony; 3. Pleuro-peripneumony, in which both Affections exist nearly in an equal Degree—General, Functional, and Local Signs—Treatment .. 195

CHAPTER III.

HYDROTHORAX.

Hydrothorax, division into—1. Idiopathic Hydrothorax; 2. Symptomatic Hydrothorax—Anatomical Characters—General, Functional, and Local Signs—Treatment.. 199

CHAPTER IV.

PNEUMO-THORAX.

Preliminary Observations — Anatomical Characters — Causes—General, Functional, and Local Signs—Treatment 202

CHAPTER V.

PNEUMO-THORAX WITH EFFUSION.

PAGE

Preliminary Observations — Signs: 1. Absence of the Respiratory Murmur; 2. Hippocratic Fluctuation — Treatment 206

PART FIRST.

DISEASES OF THE AIR-PASSAGES.

CHAPTER I.

CATARRH.

DEFINITION.—DIVISIONS INTO: 1, ACUTE MUCOUS CATARRH; 2, CHRONIC MUCOUS CATARRH; 3, ACUTE PITUITOUS CATARRH; 4, CHRONIC PITUITOUS CATARRH; 5, DRY CATARRH; 6, WHOOPING-COUGH, OR SPASMODIC CATARRH.

Acute Mucous Catarrh, frequency of — Anatomical Characters —General, Functional, and Local Signs — External Causes: Cold, Moisture with Cold, Miasm, Noxious Gases, Impalpable Powders—Predisponent Causes—Treatment: Hot Spirits and Water, Vapour Bath, Emetics, Purgatives, Diaphoretics, Expectorants, General and Topical Blood-letting, Vesicatories, Mercury—Diet.

When a mucous membrane is attacked with common inflammation—I say common, to distinguish it from specific inflammation—a catarrhal disease is produced. The word catarrh is of Greek origin, derived evidently from the verb ϰαταϱϱεω to flow down, and was originally intended to signify the disease which in ordinary language was called a *cold*. At the present day it is applied as a generic term to three distinct species of disease; viz. catarrh of the conjunctiva, of the air-passages, and of the bladder. Its limitation by writers to the diseases here mentioned is unphilosophical, unscientific, and opposed to the principles of physiology, —principles on which nosological classification can alone be advantageously based. What reason, I may ask, is there for calling an inflammation of the mucous membrane of the vagina, leucorrhœa, while an inflammation of the same kind of membrane in the bladder is designated catarrhus vesicæ?—Certainly none. Again, What can be more absurd than Dr. Cullen's arrangement with respect to diseases of mucous membranes,—diseases which have the closest affinity to each other? The same sort of answer may be given; for we find that this celebrated Professor, and those who followed in his wake, placed some of these affections in one class and some in another, apparently without due consideration—certainly without sufficient foundation. How much more in accordance with the present advanced state of science would it be to class diseases according to the nature of the tissue, or peculiar structure which they invade! Were this plan universally followed, the study of diseases, and the therapeutic means necessary to be adopted for their cure, would be much facilitated.

Catarrh affecting the air-passages may be divided into the following species:—

1. Acute Mucous Catarrh.
2. Chronic Mucous Catarrh.
3. Acute Pituitous Catarrh.
4. Chronic Pituitous Catarrh.
5. Dry Catarrh.
6. Whooping-Cough; or, Spasmodic Catarrh.

Acute Mucous Catarrh.—Of all diseases, catarrh affecting the air-passages is the most common. It attacks persons of every age, even from the cradle to the grave; both sexes, and all temperaments indiscriminately: those, however, of a bilious habit are, perhaps, more disposed to this variety of catarrh, or the acute mucous, than others. Unlike many other diseases, one invasion gives a predisposition to a second attack, and hundreds of individuals are to be found who suffer from this disease several times in the course of a year; in fact they "get a cold upon a cold," and are scarcely ever quite free from catarrh.

Anatomical Characters. — Redness, more or less diffuse, and swelling of the mucous membrane, constitute the anatomical characters of this disease.

General, Functional, and Local Signs. — Acute mucous catarrh is ushered in by a sensation of cold, sometimes confined to the back and loins, but more generally diffused throughout the body: in very severe cases, the onset very closely resembles the cold stage of ague; the skin becomes pale, corrugated, and rough, producing the appearance commonly called "goose-skin;" the teeth chatter in the head, and the application of ordinary artificial heat seems to possess but little power in moderating the shivering. The pulse during this stage of the disorder is exceedingly weak; the debility extreme; the mind is remarkable for its listlessness, and the eye is dull and without expression. After a time, the sensation of cold gradually subsides, and is succeeded by a glow of heat. The heart beats with more force and frequency; the temporal arteries throb, and delirium occasionally supervenes. The skin becomes hot and dry; the mouth parched, and the urine high coloured.

It has been already stated, that every part of a mucous membrane may be attacked with catarrh; for the convenience, however, of more accurately describing the functional and local signs of acute mucous catarrh affecting the air-passages, the disease may with advantage be divided into the following varieties: viz. Mycteritis, or cold in the head; Cynanche Pharyngea; Cynanche Tonsillaris; Laryngitis; Trachitis; and Bronchitis.

1. *Mycteritis.*—When the mucous membrane of the nostrils is examined after the cold stage has

subsided, it is found drier than usual from the suppression of the secretion, swollen, and red. It may be inferred that the mucous membrane lining the frontal, ethmoidal, sphenoidal, and maxillary sinuses, would present the same appearances could they be seen. There is a sense of weight in the head and eyes; the patient is usually much harassed by sneezing; the nostrils feel stuffed, and a particular kind of ophthalmia, viz. the catarrhal, is frequently produced. A slight difficulty of breathing supervenes, occasioned by the partial obstruction of the nostrils, the result of the swollen state of its mucous membrane. After a few hours the skin is bedewed by a gentle perspiration, the heat of the body diminishes, and the nasal secretion, which was either very much lessened or totally suppressed, now flows freely, and is augmented in quantity: it is at first somewhat acrid, but afterwards becomes of a strictly mucous character; the disease, in fact, gradually subsides, although a slight evening exacerbation and morning remission may be observed for several days.

2. *Cynanche Pharyngea.*—In this form of the disease, in addition to the ordinary symptoms, there is a slight difficulty in swallowing, and sometimes a certain degree of deafness, from the swollen state of the inner membrane of the Eustachian tube.

3. *Cynanche Tonsillaris.*—When the mucous membrane of the tonsils is attacked by catarrh,

the inflammation is very apt to spread to the glands themselves. If one tonsil be alone affected, deglutition may be but slightly impeded; if both, it is sometimes rendered impossible from the tonsils touching each other. The swollen state of these glands then becomes almost as conspicuous externally as internally, and the inflammation usually terminates in suppuration; the epiglottis participates in the inflammation, and suffocation becomes imminent. The mucous membrane of the tonsils presents a very peculiar appearance, from its being studded with white specks resembling sloughs, and the tongue is usually covered with a dense fur of a yellowish-white colour.

Laryngitis.—This disease, when violent, is one of the most dangerous in existence,—the danger depending on the small quantity of air capable of being drawn into the lungs by each act of inspiration. Pain is usually felt in the larynx; it is increased by pressure, coughing, speaking, and deglutition. When the epiglottis is involved in the inflammation, deglutition is performed only with the greatest difficulty, from the impossibility of completely depressing that organ. In some instances the attempt to swallow has proven suddenly fatal. The voice is always much altered in character; generally hoarse, sometimes reduced to a whisper, and occasionally inaudible or lost. The cough varies much; sometimes it is scarcely troublesome, at other times it is remarkable for its severity. As the disease advances, the breathing becomes more and more difficult; the ordinary muscles of respiration act with greater energy, and the extraordinary ones are called into play. The face assumes a purple or livid hue, and convulsions frequently put an end to the patient's sufferings.

Trachitis.—In this disease the pain is confined to the middle and lower parts of the neck; it is never severe, although, like the pain in laryngitis, it is somewhat increased by pressure. The voice is but little altered in character, but the breathing is more or less affected according to the state of the mucous membrane, and to the quantity of mucus in the tube. The stethoscope indicates a mucous rattle, which is entirely confined to the trachea, being inaudible in the lungs even at their very root.

Bronchitis.—The symptoms in bronchitis must vary according as the inflammation attacks one or more bronchial tubes. If one only be inflamed, and that a small one, scarcely any inconvenience will arise; if, on the contrary, the principal tubes in both lungs suffer, death may ensue. There is usually a feeling of oppression and tightness in the chest, accompanied either by a dull pain or sense of heat. Under the head of Mycteritis it was observed, that when a mucous membrane is attacked with catarrh, the mucous secretion is either much lessened or totally suppressed during the first stage of the inflammation; and that afterwards, or during the second stage of the disorder, the secretion flows freely and is augmented in quantity. The same phenomena occur in all the other varieties which we have been considering. The cough is at first dry, tickling, and very troublesome; on the establishing of the expectoration, however, the tickling and dry character of the cough disappear.

There is, perhaps, scarcely a disease in which percussion and auscultation give more important information than that which at present occupies our attention. Without their employment the nature and extent of the disease cannot accurately be determined, for the general and functional signs are common to some other diseases of the chest; but with their aid, the signs become unequivocal, and the precise nature of the malady completely revealed.

Absence of the Respiratory Murmur.—On the application of the stethoscope to the chest, an absence of the respiratory murmur may sometimes, to a larger or smaller extent, be perceived. This sign by itself is not pathognomonic, for it occurs in some other diseases of the chest, such as hepatization of the lung, the presence of a tubercular mass, an effusion into the pleura, &c.

On percussing the part where the respiratory murmur is absent, a clear sound is elicited, which demonstrates that the cells of the lungs contain air; for if a dull sound were produced it must depend either on the absence of air from the air-cells, or pleuritic effusion. The respiratory murmur can be (in a case of acute mucous catarrh), for the most part, restored by the act of coughing to the parts from which it had disappeared, when the impediment is owing to an accumulation of mucus obstructing the bronchial tubes; if, however, the absence of the murmur be caused by a thickened state of the bronchial mucous membrane, coughing, of course, will produce no such effect.

Râle Sonore, Râle Sibilant, Râle Muqueux.— The râle sonore and the râle sibilant usually appear very early in this disease, but the râle muqueux only during its second stage. The character of the râle sonore is extremely variable; sometimes it resembles the snoring of a person asleep; at other times the cooing of a wood-pigeon, or the sound produced by the fourth string of a tenor-violin; occasionally a deeper sound is heard, which has been compared to the third string of a violoncello.

The râle sonore, when once completely established, is permanent for a considerable length of time, as it depends either on a tumefaction of the mucous membrane of the bronchial tubes, or an alteration in their form, by which a contraction of their calibre is produced. The degree of contraction may, generally, be pretty fairly estimated by the sharpness or flatness of the sound; for instance, if the sound be sharp, the tubes themselves, or their inner lining, are but little altered; if, on the other hand, the sound be flat, we may be certain that the change from their normal condition is considerable. Again, the intensity of the sound is found to vary much: it may be so feeble as to be heard only with difficulty, and in the immediate vicinity of its site; or it may be so loud as to be heard even at some distance from the patient.

When the râle sonore occupies the tubes of both lungs, danger is to be apprehended. The râle sibilant very frequently exists with the râle sonore; it is heard only at the beginning or termination of inspiration: the character of its sound, like the râle sonore, varies much. It is usually a slight though prolonged hissing sound; sometimes it is like the chirping of birds; at other times, the click of a small valve; and occasionally it resembles the sound produced by triturating an unctuous substance in a mortar. This râle is evidently seated in the smaller bronchial ramifications. The hissing sound was considered by Läennec to be occasioned by a local contraction of the smaller bronchia, from thickening of their inner membrane. The other sounds are probably owing to the presence of a minute quantity of thin and viscid mucus obstructing, more or less completely, the smaller bronchial tubes. When the hissing sound is once fairly established, it usually persists for some hours: the clicking, chirping, and unctuous sounds are, however, not at all of a permanent character; for they often appear, disappear, and reappear in the short space of a few minutes, especially after a fit of coughing. Should the râle sibilant occupy the greater part of both lungs, the danger would be imminent, from the small quantity of oxygen which could arrive at the air-cells to arterialize the blood.

The râle muqueux is, in bronchitis, produced by the passage of air through mucus accumulated in the bronchial tubes. It is only heard when the secretion, which was at first suppressed, is again re-established. This râle, like the two former, is subject to great variation; it may be exceedingly feeble and audible only from time to time, or it may be so loud that it can be heard with distinctness many feet from the bed in which a patient is lying. It is then called "gargouillement."

If the mucous rattle be only heard at a few points of the chest, and the sound be feeble, it portends a favourable issue; if, on the contrary, the "gargouillement" supervene, it indicates the greatest danger.

External Causes.—The word "cold," employed to express this disease, would seem to signify that it always arose from cold. That cold is an occasional excitant cannot, for a moment, be doubted; but it would lead us to very erroneous notions to suppose that catarrh invariably, or even most frequently, derived its origin from this source: for, were this the case, the disease, common as it is, would certainly become far more common. If I were asked whether sudden changes from heat to cold, or from cold to heat, were the general exciting causes of catarrh, I should say no; otherwise men employed in gas-manufactories, glass-houses, and type-founderies, &c., would be the very persons most subject to the disease: there seems, however, very little evidence to prove that this is the fact. Again, the inhabitants of Newfoundland and of some other countries, for example, where in certain seasons the range of the thermometer varies in the course of twenty-four hours from 40° to 50° Fahr., would never be free from catarrh; while the truth is, the inhabitants of these parts do not suffer more from catarrhal affections than the natives of regions apparently more favourably located. Once more, how often are the citizens of far-famed London obliged to fly, in the course of a few seconds, from the torrid to the frigid zone; or, in other words, to leave a drawing-room, heated to nearly 70° Fahr., to occupy a bed-room cooled down, perhaps, to a temperature some way below the freezing point! As this frequently happens during severe frosts without injurious effects, we are compelled to look for other external causes, the chief of which are moisture with cold, miasm, noxious gases, and impalpable powders.

1. *Moisture with Cold.*—I should, perhaps, not be far from the truth, were I to assert that moisture

with cold produced not only more catarrhal affections than all the other exciting causes put together, but that they were the chief cause of other inflammatory disorders; they act evidently by checking perspiration, inducing in this way congestion in internal organs, and at the same time exerting a sedative action on the nervous system.

2. *Miasm.*—This word is derived from the Greek verb μιαινω, to pollute, and in medical writings means a subtle poison. Its nature, even in the present day, remains involved in the same profound obscurity in which it was hundreds of years ago; we can only judge of it from its effects. That it possesses properties varying according to the source from which it derived its origin cannot be denied, for we see that it produces in some, epidemic catarrhs; in others, typhus fever; in others, cholera; in others, ague; and lastly, in others plague.

The influenza, or epidemic catarrh, which raged in London in the year 1675, and which has been so elegantly and graphically described by the immortal Sydenham, most assuredly arose from a specific poison; and the same may be said of the epidemic catarrhs which produced such fatal effects in the years 1732, 1762, 1782, 1803, 1834, and 1841. In some respects the miasm giving rise to influenza, resembles the miasm producing Indian cholera; for instance, it travels in the very teeth of the wind, and appears to act in every state of the thermometer and barometer.

3. *Noxious Gases.*— Several gases, such as ammoniacal gas, chlorine, &c., when inhaled in a somewhat diluted state (I say somewhat diluted state, for in the undiluted form they are irrespirable), are productive of acute mucous catarrh. M. Nysten has related a remarkable case of this disease, caused by the application of ammonia to the nostrils, which terminated fatally.* A case strongly resembling that just referred to may be found in the fourteenth volume of the "Edinburgh Medical and Surgical Journal," p. 642. A lad recovering from fever was seized with epilepsy, for which his nurse applied ammonia under his nose, "with such unwearied but destructive benevolence that suffocation had almost resulted; as it was, dyspnœa, with severe pain in the throat and breast, immediately succeeded, and death took place forty-eight hours afterwards." Acute mucous catarrh in this case evidently supervened, although not distinctly stated in the report. Chlorine gas, like ammoniacal gas, cannot be inspired in the pure or concentrated state, in consequence of its producing a spasmodic closure of the glottis, as was proven by the following accident:—A friend of mine being engaged in some chemical investigations re-

---

* "Bulletins de la Soc. de Méd. 1815," No. VIII. t. iv. 352.

pecting the properties of this gas, unfortunately broke a jar containing it. He was instantly seized with a sense of suffocation, being unable to dilate the lungs, even to the smallest extent, in consequence of a spasm of the glottis; death probably would in a very short time have been the result, had he not immediately been removed to a pure air. As it was, he remained in a state of alarming debility for a considerable length of time. If a person should inhale chlorine gas diluted to an extent just sufficient to enable it to pass the glottis, most violent catarrh would supervene, which would almost always have a fatal termination. When chlorine gas is mixed with a large quantity of common air, as happens in certain chemical works and bleaching-houses, it seems not to exert any injurious influence on those accustomed to it; on the contrary, it appears occasionally to have benefited those who have first been employed in works of this description, when suffering from chronic catarrh, or some peculiar forms of asthma.

3. *Impalpable Powders.*—The inhaling of many powders when in a state of minute subdivision, gives rise to catarrh of different kinds. If the powders be very acrid, acute mucous, or acute pituitous catarrh are produced; if more bland, the disease will be trifling. They act for the most part either chemically or mechanically.

Predisponent Causes.—Whatever tends to debilitate the body, such as the immoderate indulgence in "the good things of this life," violent exercise, long fasting, insufficient clothing, &c., may prove a source of catarrh.

Treatment.—The grand object in the treatment of acute mucous catarrh is to cut the disease short at its very onset. There are three ways by which this may sometimes be effected: viz. by hot spirits and water, by the use of the vapour bath, and by emetics.

1. *Hot Spirits and Water.*—Nothing is more common than to hear non-professional people recommend a glass of hot spirits and water for a cold, immediately before going to bed; and certainly nothing answers better, if the catarrh be unaccompanied by any other disease and not violent. The celebrated Läennec tried this plan in almost innumerable cases, and with the happiest results. His prescription consisted of an ounce or an ounce and a half of brandy mixed with double the quantity of infusion of violets, made very hot and sweetened with syrup of marshmallows. The draught was usually succeeded by perspiration; sometimes, however, the disease disappeared without it.

2. *Vapour Bath.*—It is generally supposed that vapour baths are very expensive, and can only be used by the affluent. Nothing is more erroneous than this idea, for a complete bath can be purchased for the small sum of thirty-five shillings. A set of curtains, a spirit lamp, and a tin for boiling water,

form the whole of the apparatus. Probably a boiler adopted to a common fire-place, with a movable tube attached and communicating with the bath, is to be preferred; for the requisite degree of heat can by this means be always obtained, either by augmenting or diminishing the fire as the case may demand. The temperature of a vapour bath when a person first enters it should not exceed 80° Fahr., otherwise he will experience very unpleasant effects; from this point it ought gradually to be raised till it reach the degree of heat required, which will probably range between 100° and 120° Fahr. The first action of the vapour always produces some difficulty of breathing, but this after a time ceases, the eyes smart, the pulse becomes full and frequent, the skin reddens, and a copious perspiration then breaks out. When a considerable degree of languor is felt, it is a sign that a further continuance of the action of the vapour would be injurious. Suppose that a person should enter the bath while labouring under the first, or cold stage of acute mucous catarrh—that stage in which the blood is propelled from the surface of the body to the central organs—it is obvious, from what has been stated, that in a very short time the equilibrium, or balance of the circulation, would be restored; when this much-desired object is achieved, the disease may be said to be cured. Confinement to bed for a day or two, and the employment of diluents, will be necessary, to prevent a relapse.

3. *Emetics.*—Emetics might be divided into two classes, viz. those which induce immediate vomiting, by acting on the nerves of the stomach,—such as the sulphate of copper, the sulphate of zinc, &c.—and those which cause vomiting after having entered the circulation,—such as ipecacuanha, squills, tartarized antimony, &c. The emetics contained in the first of these classes are seldom employed, except to empty the stomach of a poisonous substance which may have been swallowed; but those of the second class, particularly ipecacuanha and tartarized antimony, are constantly resorted to in the treatment of disease.

The time which elapses after an indirect emetic has been swallowed, before it produces any very perceptible effect on the system, varies much in different individuals; sometimes it vomits in the space of a few minutes, at other times not till after the lapse of a considerable interval. The act of vomiting is usually preceded by nausea; the face becomes pale, and the circulation feeble and irregular: but as soon as vomiting commences the whole frame is concussed, the face flushes, the action of the heart is augmented, and the blood is propelled, with great force, through the arteries; local congestions are removed, and the skin perspires freely. A suitable emetic, for an adult, may consist of a scruple of ipecacuanha in a little mint-water (1); or, what I prefer, from the greater certainty of its action, and from its power of completely emptying the gall-bladder, is, a combination of ipecacuanha and tartarised antimony (2). A strong infusion of camomile-flowers, drunk in a tepid state, vomits admirably, and may be used with advantage in those cases in which ipecacuanha and tartarized antimony are unsuitable (3). A weaker infusion is frequently ordered to assist the action of other emetics.

If, after the employment of these means, the disease should still persist, we must then resort to other therapeutic agents adapted to remove inflammation; the chief of these are purgatives, diaphoretics, expectorants, general and topical blood-letting, and vesicatories. I shall treat of these in the order in which they are placed.

Purgatives.—This class of medicines is of infinite importance in the treatment of acute mucous catarrh, not merely to empty the stomach and bowels of their contents, but to check the inflammation of the mucous membrane of the bronchial tubes—an office which purgatives perform

(1) ℞ Pulv. Ipecacuanhæ, ℈j.
Aquæ Menthæ Vir. ℥jss. M. Fiat haustus.

(2) ℞ Pulv. Ipecacuanhæ, gr. xv.
Antim. Potassio-tart. gr. j.
Aquæ Pimentæ, ℥jss. M. Fiat haustus.

(3) ℞ Flor. Anthemidis, ʒij.
Aquæ Dest. Ferventis, ℥viij.
Macera per sextam horæ partem, et cola.

in the most admirable manner possible, in consequence of a sympathy which exists between tissues similarly organized. In the year 1834, during the prevalence of the influenza, which raged with the utmost severity in the eastern parts of London, I had an excellent opportunity afforded me of trying various plans of treatment, and I feel bound to state, that those cases which were treated by repeated purgatives got well much quicker than those treated in any other way. A cathartic of jalap and calomel (4), or scammony and calomel (5), taken every other morning for a week, confinement to bed, a free use of diluents and demulcents, such as the simple and compound decoction of barley, ripe oranges (if procurable), roasted apples, &c. constituted, in general, the whole of the treatment. If calomel cannot be employed, in consequence of an idiosyncrasy of the patient, or from any other cause, a mixture may be prescribed, containing the vinegar of meadow-saffron (6); should this be disapproved

(4) ℞ Pulv. Jalapæ, gr. xv.
Calom. gr. iij. M. Fiat pulvis.

(5) ℞ Pulv. Scammonii, gr. vj.
Calom. gr. ij.
Pulv. Zingiberis, gr. j. M. Fiat pulvis.

(6) ℞ Aceti Colchici,
Syrupi Croci, āā ℥ss.
Magnesiæ Carb. ℈iv.
———— Sulph. ʒiij.
Aquæ Menthæ Pip. ℥v. M.
Sumat cochlearia ampla duo, ter indies vel sæpius.

of, the mixture (7) will be found to answer very well.

Diaphoretics.—Diaphoretics, by increasing the action of the cutaneous capillaries, restore the balance of the circulation, cool the body, diminish febrile excitement, and remove local congestions. They are, therefore, very valuable therapeutic agents in the treatment of catarrh, and may be employed with advantage immediately after the bowels have been relieved by a purgative. To render their action tolerably certain,—I say tolerably certain, for no class of medicines deceives us oftener,—several precautions are requisite; such as the lying between blankets instead of sheets, the free use of diluents, &c. One of the best diaphoretics which we possess is Dover's powder. It is usually given in a ten or twelve-grain dose, at bed-time; but, if we have our choice of time, the morning is to be preferred, as the surface of the body is then more relaxed. No drink should be allowed the patient for at least half-an-hour after the powder has been swallowed, otherwise it is very liable, from the ipecacuanha which it contains, to cause vomiting. At

(7) ℞ Magnesiæ Sulph. ℥ss.
Mannæ, ʒvj.
Inf. Sennæ Co. ℥v.
Tinct. Sennæ Co. ʒij.
Ess. Bergamii, ♏x. M.
Capiat cyathum, bis indies.

the expiration of that period a basin of warm tea may be given, and repeated in the course of an hour. By these means diaphoresis will materially be promoted. Should Dover's powder fail, which it frequently will, I prescribe calomel with it (8), and find that this combination often succeeds after repeated doses of the powder have caused no appreciable augment of the perspiration. The mixtures (9) and (10) will be found very serviceable diaphoretics, and may be employed in those cases in which copious sweating is not required.

When the perspiration is to be checked, the skin should be carefully dried, a warm calico dress put on, and one or more of the bed-coverings removed.

Expectorants.—During the hot stage of catarrh, nauseating expectorants are only to be employed,—such as tartarized antimony and ipecacuanha. Of

(8) ℞ Pulv. Doveri, gr. x.
Calom. gr. iij. M. Fiat pulvis.

(9) ℞ Liq. Ammoniæ Acet. ℥ij.
Vin. Antim. Potassio-Tart. ʒj.
Syrupi Croci, ʒiij.
Mist. Camphoræ, ℥iijss. M.
Capiat æger cochlearia ampla tria, quartâ quâque horâ.

(10) ℞ Liq. Ammoniæ Acet. ℥j.
Vin. Ipecacuanhæ, ʒjss.
Spir. Ætheris Nit. ʒj.
Syr. Mori, ℥ss.
Aquæ Puræ, ℥jvss. M.
Sumat æger cyathum, sextis horis.

these, the latter is much to be preferred, as it is far less liable to run off by the bowels than the former, and is, therefore, much more certain in its action. From half a grain to a grain of ipecacuanha, combined with a little liquorice powder, may be administered every four hours (11). If prescribed oftener, it is very apt to induce a vomiting, which will be found troublesome to allay. In one case, in which ipecacuanha in half-grain doses was ordered to be taken at short intervals, such an irritable state of the stomach was induced, that for nearly three weeks after the discontinuance of the medicine, vomiting instantly supervened on the drinking of a little warm tea or coffee. When the febrile symptoms have somewhat abated, and the cough remains troublesome, narcotics may advantageously be combined with expectorants, as they augment their action by stimulating the capillaries of the mucous follicles, and moderate the cough. An excellent pill is formed of squills, ipecacuanha, opium, and acacia powder (12). If

(11) ℞ Pulv. Ipecacuanhæ, gr. ss.
—— Glycyrrhizæ, gr. v. M.
Fiat pulvis, quartâ quâque horâ sumendus.

(12) ℞ Pulv. Scillæ, gr. xij.
—— Ipecacuanhæ,
—— Opii, āā gr. iij.
—— Acaciæ, ℈j.
Syr. Tolutani, q. s. M.
Ut fiat massa, et in pilulas xij. divide, quarum sumat unam sextâ quâque horâ.

the bowels be in a confined state the opium may be omitted, and either hemlock or henbane substituted,—of course the dose of these must be larger.

General and Topical Blood-letting.—General blood-letting is rarely to be resorted to in the treatment of catarrh, except in that species of it denominated laryngitis, and the severer forms of bronchitis. In laryngitis, however, in consequence of its highly dangerous character, we must bleed freely, and from a large orifice, so as to produce a very marked and decided effect upon the constitution,—in fact, to produce a shock. By the bold practice just recommended, the progress of the inflammation is always materially checked, if not entirely stopped, and time is afforded for the employment of other therapeutic agents. Occasionally the blood-letting will require to be repeated, but this will be comparatively rare if the first venesection have been performed properly. Although a second general blood-letting may, for the most part, be abstained from, it will almost always be proper, after the patient has somewhat recovered from the shock caused by the venesection, to take blood topically from the region of the larynx, by means of leeches. In the treatment of other forms of catarrh, unless extremely violent, or complicated with inflammation of the lungs—a complication by no means uncommon during the prevalence of catarrhal epidemics—venesection is rather injurious than useful, as it tends very considerably to augment the debility, to render the disease of longer duration, and to diminish, in a very striking degree, the expectoration. In acute bronchitis, affecting the greater part of both lungs, blood ought to be abstracted almost as freely as in laryngitis, otherwise it would be impossible to check the inflammatory action. It must be borne in mind, that this disease is almost as dangerous as laryngitis, and that if not curbed in its very onset by the employment of energetic treatment, death will most assuredly be the result.

The topical abstraction of blood by means of leeches, after general blood-letting, is exceedingly useful in the severer forms of bronchitis. The leeches ought (especially in children) to be applied over the sternum, as the bleeding may always in this situation be commanded with the greatest ease. When the leeches fall off, the leech-bites should be covered with a warm bread-and-water poultice, which may be changed every three hours, till the requisite quantity of blood has been obtained.

Cupping on the anterior and lateral parts of the chest is inadmissible, on account of the fearful hæmorrhage which has occasionally supervened. I recollect one case where it was necessary to check the bleeding caused by cupping, by means of the actual cautery, after pressure, styptics, and cold, had failed.

Vesicatories.—Blisters are, in general, much more effective after general and topical bloodletting than before. If the inflammation be not of that degree of severity as to require a loss of blood, they may be applied at once; if, on the other hand, the inflammation be intense, the application of blisters till this be somewhat subdued will act most prejudicially,—will, in fact, feed the flame instead of extinguishing it.

In young children a blister ought never to be kept on longer than two hours; at the expiration of this period it should be removed, and a warm bread-and-water poultice applied. By adopting this plan every purpose is answered, without much suffering, and without the danger of producing ulceration. I have repeatedly been consulted in cases in which foul, spreading, and irritable sores have supervened, by allowing blisters to remain on too long, and which have proven extremely intractable. Even in adults, twelve hours (the usual period they are ordered to be applied) is much longer than is indispensably requisite to obtain their full effects, provided poultices be used on their removal. I may also add, that the risk of inducing strangury is very much lessened by the early application of a poultice. In all cases it is advisable to interpose a piece of thin muslin, dipped in oil, between the blister and skin, as it very much facilitates the removal of the plaster, and consequently diminishes the pain attendant thereon.

When a mucous membrane is but slightly inflamed, the application of a blister for an hour daily will answer admirably, and never be objected to.

Mercury.—It has been asserted, even by physicians of eminence, that mercury exerts but little power in subduing common inflammation of mucous membranes. So completely convinced am I of the error of this statement, that I have no hesitation in saying that, were the preparations of this mineral withheld from me in the treatment of severe catarrhal affections, I should be deprived of those means on which I reposed the greatest confidence. Mercury, then, according to my experience, although unnecessary in mild catarrhs, is of essential service in those of decided severity, particularly those combined with peripneumony. The preparations in the greatest favour are calomel, blue pill, mercurial liniment, and strong mercurial ointment.

In the treatment of severe cases in children, I usually employ calomel combined with a minute portion of tartarized antimony (13). The first, and perhaps the second and third dose, will excite vomiting; afterwards tolerance is for the most part

(13) ℞ Hydrargyri Chlorid. gr. ix.
Antim. Potassio-Tart. gr. ¼. M.
Et in chartas vj. divide, capiat unam tertiis vel quartis horis.

established, and the powder is borne well. Should this, however, not be the case, the tartarized antimony must either be reduced in quantity, or altogether omitted. When the inflammatory symptoms begin to abate, the intervals between the doses must be gradually augmented; but the powders should not be discontinued too early (especially in those cases in which some crepitation is perceptible in the lower lobes of the lungs), otherwise a relapse is apt to follow.

A free employment of calomel in young children should never excite the least alarm, for it is a well-ascertained fact that infants bear not only with impunity, but with the best possible effect, doses of this medicine which would be fatal to those of more advanced age. I have prescribed calomel for infants (in a two-grain dose, which has been repeated every hour for days), in a vast number of instances, without having as yet witnessed the supervention of the slightest degree of salivation; and, what is very remarkable, without having, except in a few isolated cases, induced diarrhœa. The inflammation is, nevertheless, as completely controlled in these as in grown-up persons. When calomel is prescribed for adults in frequently-repeated doses, it usually makes the gums tender, and purges; the patient ought, therefore, to be very carefully watched, lest salivation supervene,—an accident which ought always to be avoided. Should purging arise, it may be checked by combining a little opium with the calomel (14). If it be necessary to administer the calomel often, that is to say, every two or three hours (as, for instance, in the severer forms of laryngitis and bronchitis), the quantity of opium must be very small. If, on the other hand, the interval between the doses should be four, six, or eight hours, the dose of opium may be proportionably increased. In those cases in which neither calomel nor the blue pill can be borne, on account of an irritable state of the stomach, two drachms or more of the strong mercurial ointment may be rubbed on the inside of the thighs every four hours, until the desired effect be obtained; or, what is preferable, an ounce, or an ounce and a half, of mercurial liniment. The late much-respected Dr. Thomas Davies was very partial to these last preparations, especially in laryngitis. "I do not depend upon calomel alone," says he, alluding to laryngitis; "I always direct a considerable quantity, as one or two ounces, of unguentum hydrargyri fortius, or the linimentum hydrargyri, to be rubbed in for an hour or two, and to be repeated every three or four hours, using it without limitation until the patient be relieved. You must not," continues he, "be afraid of the remedy; and you will often be re-

(14) ℞ Hydrargyri Chlorid. gr. ij.
Pulv. Opii, gr. ¼.
Mist. Acaciæ, q. s. Ut fiat pilula.

warded by seeing a permanent relief afforded as soon as the mouth is affected."[*]

If, in spite of the active treatment which has just been recommended, a laryngitis still persist, and suffocation become imminent, tracheotomy must be performed, as it is the only means left of giving the patient a chance of recovery.

During the period of convalescence, when little remains but debility, a light tonic will be of essential service; such as gentian (15), cascarilla (16), calumba (17), quinine (18).

Having now dwelt at considerable length on the various therapeutic agents which have been lauded in the treatment of acute mucous catarrh, I shall finish my account of this disease with a few brief observations concerning the diet and domestic management of the sick.

---

[*] "Lectures on the Diseases of the Lungs and Heart." By Thomas Davies, M.D. P. 118.

(15) ℞ Inf. Gentianæ Co. ℥vss.
Tinct. Aurantii,
—— Cardamomi Co. āā ʒij. M.
Capiat cochlearia magna duo, ter indies.

(16) ℞ Infusi Cascarillæ, ℥vss.
Tincturæ ejusdem, ℥ss. M.
Sumat partem quartam, mane, meridie, nocteque.

(17) ℞ Infusi Calumbæ, ℥vss.
Tincturæ Cinnamomi Co. ʒij.
Syrupi Aurantii, ʒiij. M.
Capiat cyathum, bis indies.

(18) ℞ Quinæ Disulph. gr. iv.
Acid. Sulphurici Dil. ♏x.
Aquæ Destillatæ, ℥vj. M.
Sumat cochlearia magna tria, quartâ quâque horâ.

During the acute stage of the disorder there must be a total abstinence from meats of all descriptions, and fermented and spirituous liquors; in a word, from all those things which tend to stimulate the nervous and circulatory systems. Thin gruel, tea, barley water, toast water, weak lemonade, and ripe fruits, constitute the diet for the first few days. The patient ought to be confined to bed, as it very materially aids in restoring the balance of the circulation, by exciting the action of the cutaneous exhalents. It is advisable in those cases of acute mucous catarrh in which some intolerance of light is manifested, accompanied with delirium, to darken the room of the sick: this will add much to the patient's comfort. The bed-room should also be kept as nearly as possible of the same temperature, night and day, and the greatest care ought to be taken lest the patient catch cold when occasion calls him out of bed.

After the inflammatory symptoms have subsided, the diet must be more generous, such as chicken broth, mutton broth, beef tea, jellies, boiled fowl, &c. I have found the strength much restored by ordering a cupful of drink to be taken, composed of equal parts of strong beef tea and milk. A little ale, or generous port wine, will also expedite the cure.

CHAPTER II.

CHRONIC MUCOUS CATARRH.

Preliminary Observations — Anatomical Characters — General, Functional, and Local Signs — Treatment: Leeches, Blisters, Setons and Issues, Moxas, Stimulating Ointments, Oils, and Plasters, Emetics, Expectorants, Tonics and Astringents, Inhalation of Dilute Chlorine — Diet, &c.

THIS disease is frequently a sequel of acute mucous catarrh; it sometimes occurs in children, but is principally met with in those of advanced age. When once fairly established it is almost always exceedingly difficult to eradicate, and will often, in spite of the various means which may be employed to combat it, persist during the lifetime of the patient. In cases of the latter description there are always very marked remissions, especially in warm and dry seasons; during the prevalence of cold and wet weather, however, exacerbations invariably supervene.

Anatomical Characters. — The appearances on dissection are by no means uniform. In children they will closely resemble those of acute mucous catarrh; even in old people the resemblance is often very striking, but this evidently depends on certain changes which take place after-death; for the most part the mucous membrane is either paler than in the normal state, or of a slightly violet hue; occasionally of an uniform yellowish white colour. The bronchial tubes are always found loaded with secretion and sometimes dilated. The secretion is of very variable appearance in different individuals. It may be of a yellowish, whitish, greenish, or blackish colour; perfectly opaque, or mixed with transparent fluid; inodorous, or exhaling a most offensive smell.

General, Functional, and Local Signs.—When this disease has supervened to acute mucous catarrh, the cough and expectoration persist after the febrile symptoms have subsided; the patient, instead of regaining flesh and strength rapidly, either remains emaciated and enfeebled or recovers very slowly. It is, indeed, under circumstances such as these that percussion and auscultation prove so truly valuable. How often have I been consulted about patients having all the general and functional signs of consumption, but who were proven by the means just mentioned to be only suffering from chronic mucous catarrh — a disease capable, in most instances, of being very much relieved, if not cured!

The chest generally yields as clear a sound on percussion as in a state of perfect health; when there are, however, many of the bronchial tubes dilated, a somewhat duller sound is elicited, which evidently depends on the condensation of the pulmonary tissue. The stethoscope reveals to us the presence of a mucous rattle; and if an acute mucous have supervened to a chronic catarrh, the sonorous and sibilant rattles are also distinguishable. The mucous rattle varies much in character. Läennec has designated the size of the bubbles in this rattle as "very large, large, middling, and small." All these varieties of bubbles are capable of manifesting themselves in the course of the disease; the rattle is occasionally so loud that it can be heard with ease several feet from the patient. This happens if the secretion be excessive. When a number of bronchial tubes are much dilated, pectoriloquy and cavernous rattle are sometimes present.

Treatment.—Leeches, blisters, setons, issues, moxas, stimulating ointments, oils and plasters, emetics, expectorants, tonics and astringents, and the inhaling of dilute chlorine, have all proven useful in the treatment of this disease.

Leeches.—The application of a few leeches is of great importance in those cases in which the sonorous or sibilant rattle may have supervened, to relieve the congested state of the mucous membrane; leeches prove also of service when the breathing of the patient becomes difficult (provided the state of the pulse admits of it), as a topical abstraction of blood lessens in some degree the necessity for respiration, and renders the breathing freer.

Blisters.—Blisters are even of more use in chronic than acute catarrh, for they are admissible very often when even a topical abstraction of blood would be productive of most serious mischief. I invariably prefer the application of a succession of blisters to the plan frequently adopted of keeping one open for a length of time, either by cantharidine or savine ointment. In this country, blisters are usually applied either to the anterior part of the chest or between the shoulder-blades. On the Continent, especially in France, the inside of the thighs is the part most frequently vesicated. In a great many cases the continental plan will be found more advantageous than the English, and I may add, far less painful; because a blistered thigh can be preserved perfectly quiet, whilst a blistered thorax must necessarily be in constant action.

Setons and Issues.—In the treatment of the chronic catarrh of old people, setons and issues, in consequence of the perpetual drain which they occasion, prove truly valuable therapeutic agents. If it should be deemed expedient at any time to dry them up, the patient ought to be repeatedly purged, otherwise a sudden augment of the bronchial secretion might threaten suffocation, or symptoms of apoplexy manifest themselves.

Moxas.—Moxas are more used by Asiatic and Egyptian than European practitioners. In this country there is a strong prejudice against them, on account of the severity of the pain which they produce; they are, nevertheless, very valuable remedies, and may be employed with advantage in persons naturally courageous and capable of bearing considerable pain. If after their application the pain should be extremely severe, it may always be moderated by a little spirits, such as brandy, whisky, or gin; ammonia and oil of turpentine also afford very considerable relief.

Stimulating Ointments, Oils, and Plasters.—The ointment of the potassio-tartrate of antimony of the "London Pharmacopœia" diluted with nearly half its weight of lard, or spermaceti cerate, is almost the only stimulating ointment employed in diseases of the chest by British practitioners. A piece about the size of a nutmeg may be rubbed on the thorax or between the shoulder-blades every night, till a crop of pustules arise; these pustules closely resemble those of small-pox. When they begin to die away the ointment may again be rubbed in, and a fresh crop will be produced: this operation should be repeated as often as necessary. I have been in the habit of frequently employing croton oil as a counter-irritant in chest affections, and with decided advantage. It may be used undiluted in the majority of cases; if, however, the patient should be of an irritable temperament, the diluted state is to be preferred. From fifteen to twenty minims should be poured upon the chest, and rubbed in with a small piece of flannel for ten minutes. The part on which the oil has been applied has, in a short time, an inflammatory blush, which, if examined in the course of twelve hours, will usually be found studded with minute vesicles; at the expiration of twenty-four hours the fluid in the vesicles becomes somewhat opaque. The vesicles are for the most part distinct, and appear to be seated in the mouths of the sebaceous glands of the skin; sometimes they are confluent, and occasionally a crop of vesicles is also seen on a distant part of the body — a part on which not a particle of oil has been applied.

The tartar emetic ointment, or croton oil, may be employed in those cases in which the patient refuses to be blistered.

The stimulating plasters in common use are the galbanum and pitch. The former of these is comparatively mild; the latter sometimes excites so much pain as to be almost insupportable: when once applied it adheres firmly, and can only be removed with the greatest difficulty, unless it be well soaked with oil of turpentine.

Emetics. — In young persons, whose bronchial tubes are loaded with mucus, emetics prove highly beneficial, and will seldom fail to relieve the difficulty of breathing originating from this source; a small quantity of tartarized antimony (19) or

(19) ℞ Antim. Potassio-Tart. gr. jss.
Aquæ Destillatæ, ℥jss. M.
Capiat cochleare minimum, bis in horâ, donec evomuerit.

ipecacuanha (20) will answer admirably, especially if the latter be combined with a little syrup of squills. In middle-aged people it is better to excite vomiting, either by the sulphate of zinc (21) or the sulphate of copper (22). Of these, the latter claims our preference, on account of the greater certainty of its action. I had one patient under my care who could take the sulphate of zinc in ten-grain doses without any perceptible effect being produced. Such a tolerance I have never witnessed when sulphate of copper was employed. I think it right, however, in this place to mention that the opinion which I have now advanced respecting the comparative value of sulphate of zinc and sulphate of copper as an emetic, disagrees with that of Professor Vogt. Speaking of the power of the latter as an emetic, this learned man says "Es wohl nicht stärker als solches wirkt, als zinkvitriol und doch viel eher von seiner aetzkraft sowohl, als sonstigen giftigen eigenschaft nachtheile zu befürchten sind."[*] In very old people the employment of emetics is altogether inadmissible in the treatment of chronic mucous catarrh, on account of the debility which occasionally follows the act of vomiting.

---

(20) ℞ Vin. Ipecacuanhæ, ℥ss.
Syrupi Scillæ, ʒiij.
Aquæ Destillatæ, ʒv. M.
Sumat cochlearia minima duo, sextâ quâque parte horæ, donec supervenerit vomitus.

(21) ℞ Zinci Sulphatis, gr. xv.
Aquæ Destillatæ, ℥jss. M.
Fiat haustus emeticus.

(22) ℞ Cupri Sulphatis, gr. x.
Aquæ Destillatæ, ℥jss. M.
Fiat haustus emeticus.

Expectorants. — Some expectorants, such as ipecacuanha and squill, are principally fitted for those cases where an acute mucous has been added to a chronic catarrh; others are more suitable for the state of debility of chronic catarrh, as assafœtida, galbanum, myrrh, sagapenum, and balsam of copaiva: of these latter, assafœtida and the balsam of copaiva have enjoyed by far the greatest share of professional favour, although they both have considerable drawbacks on account of their disgusting taste and smell. Assafœtida imparts its peculiar odour to all the secretions, and renders a patient under its influence offensive to all around him. In some parts of India, however, the inhabitants are so particularly fond of this drug that they mix it with their food, firmly believing that it assists digestion. Dr. Tozzetti mentions this fact on the authority of persons who have travelled in India. "Altri viaggiatori ci dicono che i Baniani delle Indie la mescolano nei loro cibi, credendola cordiale e buona per la digestione, e perciò hanno essi un fetore grande non solo per l' alito ma anche per la traspirazione."*

---

[*] "Lehrbuch der Pharmakodynamik." Von Dr. Philipp Friedrich Wilhelm Vogt. Ersten Band. 355.

Assafœtida, by its stimulating properties, rouses the system, facilitates expectoration, removes spasm of the smaller bronchial tubes when it exists, and, after a time, materially diminishes the secretion of mucus. It may be exhibited in the form of pill, either by itself or mixed with other antispasmodic expectorants, as in the compound galbanum pill of the "London Pharmacopœia:" for my own part I prefer the tincture, on account of its quicker action (23). The balsam of copaiva was at one time almost exclusively used in mucous affections of the urethra, bladder, and vagina; it is also now employed to combat diseases of the mucous membrane of the air-passages and alimentary canal. Our celebrated countryman, Armstrong,† was among the first who gave the balsam a fair trial in chronic mucous catarrh; and so well satisfied was he with its power, that he considered it almost in the light of a specific. A very elegant copaiva mixture may be made by suspending the balsam in cinnamon-water by means of mucilage, and then adding sugar and compound tincture of

---

[*] "Lezione di Materia Medica, del Dottor Ottaviano Targioni Tozzetti, Professore di Botanica e Materia Medica." 314.

(23) ℞ Tincturæ Assafœtidæ, ʒj.
Aquæ Destillatæ, ℥vj. M.
Sumat cochlearia magna tria, sextâ quâque horâ.

[†] "Treatise on Scarlet Fever," 271.

lavender (24). Should a solid form be preferred, the balsam may be converted into a clear soap by adding one part of liquor ammonia, of the specific gravity 0·950, to three parts of balsam.* A few grains of this soap may be taken in the form of pill as often as required. Calcined magnesia, if added to the balsam, forms also a clear soap,† which becomes a valuable substitute for the former if it should disagree. After all, no preparation of the balsam is equal to the copaiva capsules. These are perfectly free from taste and smell, and have, therefore, decided advantages over all the other forms which have as yet been proposed. Copaiva balsam is exceedingly apt to induce distressing nausea, and sometimes vomiting; it also excites the peristaltic action of the bowels: the latter may be restrained by combining it with small doses of opium, but the former can only be alleviated by diminishing the dose or taking it less frequently. Tozzetti cautions us against too great or too often

(24) ℞ Balsami Copaivæ, ʒiij.
Pulvis Acaciæ, ʒij.
Sacchari Albi, ℥ss.
Tincturæ Lavandulæ Comp. ʒj.
Aquæ Cinnamomi, ℥vss. M.
Sumat cochlearia magna duo, ter indies.

---

* "Grundriss der Pharmakognosie des Pflanzenreiches zum gebrauche bei akademischen Vorlesungen, so wie für Aerzte, Apotheker und Droguisten entworfen." Von Dr. Theodor Wilhelm Christian Martius. 341.

† Ibidem, 341.

repeated doses: he says, "E capace di suscitare febbri e ardore di ventre, ed è pregiudiciale nelle emottisi e nel mitto sanguigno."*

Tonics and Astringents.—Tonics and astringents are only admissible when the augmented secretion evidently arises from a relaxed state of the mucous membrane of the air-passages. In cases of this description no tonic is so truly valuable as the disulphate of quinine (25). Should the patient tire of it, he may take with advantage the compound infusion of roses. The simple infusion of calumba or cascarilla, or the compound infusion of gentian, are also excellent bitters, and may have a little of their respective tinctures combined with them. When the debility is very great, I am in the habit of prescribing the aromatic spirit of ammonia with gentian (26).

The astringent substances which have proven most useful in the treatment of chronic mucous catarrh are the sulphate of copper, the tincture of the sesquichloride of iron, the leaves of the uva ursi, and the root of the cissampelos pareira: of these, the sulphate of copper is decidedly the most powerful; it may be given in the form of pill, or in solution: in either case it ought to be combined with opium (27) or henbane (28). The tincture of the sesquichloride of iron should be administered in water, or in some bitter infusion, which does not decompose it, such as gentian or quassia. The uva ursi and cissampelos pareira are usually prescribed in powder or infusion.

---

* "Lezioni," 309.

(25) ℞ Quinæ Disulph. gr. iv.
Acid. Sulphurici Dil. ♏x.
Aquæ Destillatæ, ℥vj. M.
Sumat partem quartam, ter indies.

(26) ℞ Spiritûs Ammoniæ Arom. ʒj.
Infusi Gentianæ Comp. ℥vj. M.
Sumat cochlearia magna duo, ter indies.

Inhalation of Dilute Chlorine.—The discovery of the utility of dilute chlorine in the treatment of pulmonary affections, was purely accidental. It was observed, that men who were for the first time engaged in chlorine works, whilst labouring under chronic catarrh, materially improved in health, their expectoration was very much lessened, and their cough ceased to be troublesome. These facts were not lost sight of, and numerous experiments were made both here and on the Continent to ascertain the real value of dilute chlorine in pulmonary affections. The result seems to shew that it is a remedy of great power in the treatment

(27) ℞ Cupri Sulphatis, gr. ⅓.
Tincturæ Opii, ♏vj.
Aquæ Destillatæ, ℥jss. M.
Fiat haustus, octavâ quâque horâ sumendus.

(28) ℞ Cupri Sulphatis, gr. ½.
Tincturæ Hyoscyami, ♏xxx.
Aquæ Destillatæ, ℥jss. M.
Fiat haustus, mane, nocteque sumendus.

of chronic catarrhs. Professor Anthony Todd Thomson recommends, for the purposes of inhaling, "one or two fluid drachms of a saturated aqueous solution of this gas, to be put into a tubulated bottle containing about two ounces of hot water, and placed either in a basin of hot water or over a small lamp, in order to extricate the chlorine from its aqueous solvent. The patient should inhale this quantity at one time, and the dose should be repeated once, at least, every six hours, so as to maintain the effect produced on the mucous membrane."* The quantity of the saturated aqueous solution here recommended appears to me enormous, and I feel fully satisfied that few patients will be found able to bear it—at all events, at first. Professor Vogt begins with from five to eight drops, and gradually augments the number to twenty-five.†

Diet, &c.—The diet of the patient must vary with the nature of the disease. At one time, the antiphlogistic diet will be most suitable; at another, the system will require to be supported by all the means in our power. In long-standing cases, accompanied with considerable debility, gentle carriage exercise, provided the weather be warm and dry, will prove useful.

---

* "Elements of Materia Medica, &c." By A. T. Thomson, M.D. ii. 151.

† "Lehrbuch der Pharmakodynamik." Von Dr. Vogt. Zweiter Band, 47.

CHAPTER III.

ACUTE PITUITOUS CATARRH.

Preliminary Observations—Anatomical Characters—General, Functional, and Local Signs.

This disease is distinguished from acute mucous catarrh chiefly by the colourless, viscid, and transparent nature of the secretion. It attacks those of a strumous or lymphatic temperament, rather than those of a bilious or sanguineous habit.

Anatomical Characters.—The anatomical characters of acute pituitous catarrh so closely resemble those of acute mucous catarrh, that, were it not for the transparent viscid secretion just referred to, it would often be impossible to distinguish these diseases from each other by a post-mortem inspection. The redness and swelling of the mucous membrane are in general less marked in the acute pituitous than the acute mucous catarrh.

General, Functional, and Local Signs. — Acute pituitous catarrh, like the acute mucous, is ushered in by febrile symptoms. When the conjunctivæ, the schneiderian membrane, fauces, and larynx, are the principal seats of the disease, they feel at first hot and dry; but afterwards the transparent secretion described above is poured forth in abundance, which always irritates and occasionally excoriates the parts over which it passes. The inflammation spreads to the lachrymal glands; these act with great vigour, and secrete tears too fast for their absorption by the puncta lachrymalia. A considerable part of the tears consequently passes over the cheeks; that part, however, which is conveyed by the lachrymal ducts into the nostrils, irritates the schneiderian membrane, and there is a constant distillation from the nose of pituitous secretion mixed with tears. The cough is always troublesome, and when the air-tubes of the greater part of both lungs are involved in the disease it is accompanied by a copious expectoration, which, after standing for a time, is "frothy on the surface and underneath like white of egg diluted with water."* The dyspnœa is for the most part severe, and there is a sense of fulness or tightness in the chest accompanied by a feeling of soreness. The stethoscopic signs are almost precisely similar to those of acute mucous catarrh. The respiratory murmur may be absent from some parts of the lungs, puerile in other parts; occasionally it is obscured by the loudness of the various rattles which may be present.

---

* "A Treatise on the Diseases of the Chest, and on Mediate Auscultation." By R. T. H. Läennec, M.D. Translated by John Forbes, M.D. 82.

Treatment. — The same remedies which are adapted to combat acute mucous catarrh are suitable in the treatment of acute pituitous catarrh; in the latter disease, however, blood-letting must be employed with a more sparing hand than in the former affection, in consequence of the great debility which almost invariably supervenes.

CHAPTER IV.

CHRONIC PITUITOUS CATARRH.

General Observations — Treatment.

Chronic Pituitous Catarrh is a disease of advanced life, and, according to Läennec, "never succeeds the acute species."* It attacks those whose constitutions have been debilitated by excess or over-exertion, rather than the strong. For the most part it occurs in paroxysms; at first the patient usually suffers only when rising from bed; after a time there are two or more attacks in the course of twenty-four hours; the paroxysm is always accompanied by dyspnœa, this is sometimes so considerable as to threaten immediate dissolution: the face becomes purple or livid from venous congestion, and does not resume its wonted hue till after the expectoration of a considerable quantity of pituitous secretion. The disease may last for many years, but the severity of the symptoms is much ameliorated during the summer months; the cold, wet, and foggy weather of winter, invariably augments the force and frequency of the paroxysms. The only morbid appearance met with in old-standing cases is, a greater paleness than usual of the mucous membrane of the bronchial tubes.

---

* "A Treatise on Diseases of the Chest," &c. by R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 84.

Treatment.—The same principles are to guide us in the treatment of this disease as in the chronic mucous variety.

CHAPTER V.

DRY CATARRH.

Preliminary Observations — Anatomical Characters — General, Functional, and Local Signs — Treatment.

This disease may exist in a slight degree for a considerable number of years, without producing any inconvenience to the patient, unless he use greater exertion than usual; in general, however, it seems connected with a cachectic diathesis. It forms the sympathetic, or constitutional cough, of the older writers.

Anatomical Characters. — The mucous membrane of the bronchial tubes is of a dull red or violet colour; it is somewhat swollen, especially in the smaller ramifications. Dr. Hume Weatherhead, a recent writer on diseases of the chest, entertains opinions concerning the nature of the seat of dry catarrh widely different from those ordinarily received. According to this gentleman, "the mucous membrane is very little involved in the morbid phenomena. The disease lodges deeper, and has its seat chiefly in the interstitial cellular tissue of the muscular fasciculi of the air-tubes."[*]

The bronchial secretion in dry catarrh has a peculiar pearl-like appearance, and has, therefore, been denominated "sputa margaritacea." It consists of small viscid globules of a greyish-white colour, which do not contain air.

General, Functional, and Local Signs.—When dry catarrh is engrafted on a gouty or otherwise cachectic constitution, it invariably becomes more annoying as the patient advances in years. In gouty subjects, the cough, which is usually extremely distressing, for the most part either totally disappears, or is very much lessened, on the accession of a fit of the gout. There is another peculiarity with respect to the gouty cough which has been but very little attended to; viz. that fine weather, which contributes so materially to remove other kinds of cough, seems almost always to increase the violence of gouty cough. The cough in dry catarrh generally occurs in paroxysms, and is usually preceded by a sensation of tickling in the throat; it is very noisy, and continues with great violence till a small quantity of the pearl-like sputa has been expectorated. The patient remains for a considerable time after each paroxysm panting for breath.

---

[*] "A Practical Treatise on the Principal Diseases of the Lungs." By G. H. Weatherhead, M.D. 112.

Percussion yields as good a sound in this disease as in health, but on ausculting the chest, the respiratory murmur is found absent from those parts corresponding with the obstructed bronchial tubes. The respiratory murmur may frequently be made to reappear by ordering the patient to cough; the sibilous and sonorous rattles are occasionally present.

Treatment.—Blood-letting is seldom required in the treatment of dry catarrh, unless the symptoms be very urgent; and even then, the topical abstraction of blood is to be preferred, on account of the usually cachectic state of the patient. Blisters and other counter-irritants are sometimes indicated, but the good effect which they produce is very transitory. The vapour-bath should be ordered much more frequently in this disease than it is at present; for nothing tends so completely to facilitate expectoration as this therapeutic agent. Opium and other narcotic substances have been much prescribed to allay the fits of coughing; their employment, however, requires the greatest discrimination, and their effects should be carefully watched, otherwise the patient may be brought into the greatest danger, in consequence of the obstruction of the bronchial tubes by inspissated mucus. Narcotics certainly lessen the cough for a time, but when their effects have subsided, the cough frequently returns with redoubled violence: should the nature of the case indicate their employment, it will be advisable to give them with some expectorant, such as squills (29) or ipecacuanha (30). The alkalies seem to possess the power of diminishing in a remarkable degree the viscidity of the secretion, and, therefore, facilitate expectoration : they may be used either alone or united with oils, in the shape of emulsions or soaps. The liquor potassæ, diluted with water, answers very well (31), or it may be combined with oil of almonds (32). The late Dr. Thomas Davies was in the habit of prescribing from five to ten grains of common yellow soap three times a-day, in dry catarrh, with the happiest results.*

(29) ℞ Oxymellis Scillæ,
Syrupi Papaveris, āā ℥j. M.
Sumat cochleare minimum, urgente tussi.

(30) ℞ Misturæ Amygdalæ, ℥v.
Tincturæ Camphoræ Co. ʒij.
——— Hyoscyami, ʒj.
Vin. Ipecacuanhæ, ʒjss.
Syrupi Tolutani, ʒv. M.
Capiat cochleare medium, pro re natà.

(31) ℞ Liquoris Potassæ, ʒj.
Aquæ Destillatæ, ℥vj. M.
Sumat partem quartam, sextâ quâque horâ.

(32) ℞ Liquoris Potassæ, ʒj.
Olei Amygdalæ, ℥ss.
Aquæ Destillatæ, ℥vss. M.
Sumat cochleare magnum, pro re natâ.

---

* "Lectures on the Diseases of the Lungs and Heart." By T. Davies, M.D. 140.

The tickling sensation in the throat, which is so often a source of great annoyance in this disease, is, for the most part, to be removed by ordering the patient to sip, at short intervals, a little cold water or tea; this will tend to remove the dryness of the fauces and epiglottis which is usually experienced, and which is probably the immediate cause of the tickling sensation just referred to. I have frequently seen considerable benefit arise in dry catarrh by a free allowance of oranges and barley-sugar.

CHAPTER VI.

WHOOPING-COUGH; OR, SPASMODIC CATARRH.

Preliminary Observations — Anatomical Characters — General, Functional, and Local Signs — Treatment: Blood-letting, Counter-irritants, Emetics, Narcotics, Tonics, and Antispasmodics — Change of Air — Diet, &c.

WHOOPING-COUGH, or Spasmodic Catarrh, sometimes called hooping or kin-cough, is especially a disease of infancy, although it occasionally attacks adults. It is produced, like other catarrhs, by cold and moisture, and by miasmata, and is thought by many practitioners to be of a contagious nature. It differs, however, from the other catarrhs by making (except in rare instances) only one invasion in the course of a man's life; by the purely spasmodic character of the cough, and by the difficulty which is frequently experienced in combating it.

Anatomical Characters.—It would be impossible to state to a certainty, from the mere inspection of the bronchial tubes of a person destroyed by whooping-cough, what the real nature of the disease was, in consequence of the mucous membrane of the air-passages possessing characters corresponding to the other catarrhs; such as redness, more or less diffused, and tumefaction.

General, Functional, and Local Signs.—Whooping-cough is always preceded either by a mucous or pituitous catarrh, which usually lasts for several days; the character of the cough then gradually changes, becomes convulsive and recurs at intervals. A fit of whooping-cough is composed of one long sonorous inspiration, which constitutes the whoop—the pathognomonic sign of the disease —followed by several quick expirations: if the disease be intense, the inspiration and expirations are repeated a number of times; a sense of constriction is felt in the larynx, evidently depending on a spasm of the glottis; the face becomes flushed, sometimes livid or purple, from venous congestion; the sufferer frequently exhibits signs of impatience, stamps violently with his feet, bends his head forward, and grasps the nearest object for support. The fit usually terminates by a vomiting of mucous matter, and an expectoration, or rather ejection, from the mouth, of a ropy, viscid, transparent phlegm: towards the close of the paroxysm the sputa are often opaque, thick, and of a yellowish colour. When the fit is over, the little sufferer will immediately return to his toys, and amuse himself in the same manner as if nothing had occurred, till the accession of the next paroxysm. There are usually several fits in the course of the day. The duration of this disease is exceedingly variable; sometimes it runs its course very rapidly, at other times it persists, in spite of the most approved methods of cure, for months. The degree of danger seems to depend on the age of the patient; for it has been observed, that "a large majority of those who die from its attacks are under two years of age."*

Percussion yields us no information which indicates disease if whooping-cough exist in an uncombined state. Auscultation, during the intervals between the fits, discloses the same phenomena as in the other species of catarrh: such as an absence of the respiratory murmur from one part of the chest, puerile respiration in another part; a mucous, sibilous, or sonorous rattle is frequently perceptible, and, if the disease be complicated either with peripneumony or œdema of the lungs, a crepitant râle may become manifest.

Treatment.—Whooping-cough, as already observed, is frequently a most troublesome and tedious disease to combat; this is apparent from the vast variety of remedies which have at different times been proposed for its use. Some therapeutic agents have been lauded in the most extravagant manner, and regarded in the light of specifics;

---

* "Dr. Good's Study of Medicine," by Samuel Cooper. 3d edit. Vol. I. 601.

their reputation, however, has been but ephemeral, and they have again quickly been launched into the obscurity from which they had for a time emerged. Blood-letting, counter-irritants, emetics, narcotics, tonics and antispasmodics, and change of air, claim our chief confidence.

Blood-letting.—General blood-letting will never be required in a child, and scarcely ever in an adult, in the treatment of whooping-cough; but a topical abstraction of blood proves often of the greatest benefit, notwithstanding the fears entertained by many writers of its capability of aggravating the spasm. It is true that a very great loss of blood will sometimes induce convulsions; but it is equally true that a moderate abstraction of blood will, by its powerful sedative action, remove spasms which have obstinately refused to yield to other remedies. My plan is, therefore, to order one or two leeches to be applied to the chest of a child when the disease is violent; and I may add that I never have, as yet, had occasion to repent of my having done so: for the catarrhal symptoms, and frequently the spasmodic, materially abate by their use. If the child be very young, one leech will be sufficient.

Counter-Irritants.—These should never be employed in whooping-cough till after blood-letting; they then prove often of the greatest service, particularly in those cases complicated by inflammation or œdema of the lungs. Blisters are to be preferred to the other counter-irritants, on account of the copious discharge of serous fluid which they occasion. In chronic cases, tartar-emetic ointment, Burgundy pitch-plasters, and issues, are frequently of use.

Emetics.—Emetics are of more service in the treatment of whooping-cough than any other class of remedies. They may be repeated once or twice a-week during the severity of the attack, especially if the patient be young, as children are found to bear vomiting better than adults. Emetics, by unloading the air-tubes of the viscid mucus with which they are clogged, materially relieve dyspnœa when present; they may also be regarded as powerful antiphlogistics and antispasmodics. The emetic substance which has been most employed in whooping-cough is the potassio-tartrate of antimony. Ipecacuanha wine, or ipecacuanha in the form of powder, answers very well, and may be given in those cases in which, from a peculiarity of constitution, the potassio-tartrate of antimony is not so well adapted.

Narcotics. — Opium, digitalis, conium, and belladonna, have been tried on a very extensive scale in the treatment of whooping-cough; the last two possess, at the present day, the highest reputation. Dr. Pearson was in the habit of prescribing ipecacuanha and sesquicarbonate of soda with the opium (33), and with the happiest results; he was led to the employment of the last substance from the sour smell of the fluid brought up by vomiting.* The sesquicarbonate, no doubt, in addition to its power of correcting the acidity existing in the stomach, diminished the viscidity of the bronchial secretion, and, of course, favoured expectoration.

When digitalis is employed, the tincture is to be preferred to either the powder or infusion, on account of the greater certainty of its action. It may be administered in the same way as the tincture of opium. Conium has been used in the form of extract, tincture, plaster, powder, and cataplasm. Dr. Butter tried the extract in twenty cases with success. He directs half-a-grain for a child under six months old; one grain for a child from six months to two years; afterwards allowing half-a-grain for every year of the patient's age, till he be twenty. If the patient have not two stools a-day, he advises magnesia or the lixivia vitriolata

(33) ℞ Tincturæ Opii, ♏vj.
Vini Ipecacuanhæ, ♏xxx.
Sodæ Sesquicarb., gr. xviij.
Syrupi Aurantii, ʒij.
Aquæ Destillatæ, ʒx. M.

Capiat cochlearia minima duo, sextâ quâque horâ. This prescription is adapted for a child under one year of age.

---

* "Medico-Chirurgical Transactions:" art. iii.

sulphurea to be added to the hemlock mixture. By this method, according to this gentleman, the peculiar symptoms of the disease are removed in a week; nothing but a slight cough remaining.* The high encomium bestowed on hemlock by Dr. Butter, in the treatment of whooping-cough, induced other practitioners to use it more extensively than they had hitherto done. The result has shewn that, although it certainly possesses considerable power in subduing the violence of the cough and augmenting the interval between the paroxysms in many cases of this disease, yet, in other cases, it is entirely powerless. Should I feel disposed to prescribe hemlock in whooping-cough, I certainly should commence with a much smaller dose than that employed by Dr. Butter, if the patient be very young, as children are more susceptible to the influence of narcotics than adults. Professor Läennec was a stanch advocate for belladonna in whooping-cough: he considered it "superior to other plants of the same family; it lessens (says he) the necessity of respiration, and consequently dyspnœa, more certainly than any other narcotic."† Professor Vogt also speaks highly of its powers, particularly in the last stage of the disease, when no active inflammation of the mucous membrane of the bronchial tubes is present.[*] The dose of the extract is from an eighth to a quarter of a grain. The many failures which have occurred when belladonna has been prescribed are to be attributed, no doubt, to its improper administration. "Viele (says Professor Vogt) haben zwar auch behauptet dass sie unwirksam sei bei dieser Krankheit — jedoch gebrauchten sie dieselbe auch unter verhältnissen wo sie nichts wirken konnte, und in zu kleinen Gaben.[†] The emplastrum belladonnæ of the "London Pharmacopœia" may be applied to the chest, in those cases in which the internal use of the drug would prove injurious.

---

* "Edinburgh Medical and Physical Journal:" article, "Pertussis."

† "A Treatise on Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 102.

In very obstinate cases other narcotics may be resorted to; the chief of these are the narcissus pseudo narcissus, the ledum palustre, and the hydrocyanic acid. The first of these has been recommended by Läennec,[‡] the second by Linnæus,[§] and the third by Magendie.[‖]

Tonics and Antispasmodics. — These medicines can only be used with advantage in chronic cases when there is not a single trace of inflammatory action left, and when the disease seems to depend solely on debility. The tonics which have been principally employed are various preparations of cinchona, gentian, calumba, the sesquioxide of iron, the tincture of the sesquichloride of iron, and Fowler's arsenical solution; of the antispasmodics, assafœtida is the most valuable. The rhus vernix, the lobelia inflata, and the valerian, also claim our attention; and a vast number of practitioners place considerable confidence in musk and castor.

---

[*] "Lehrbuch der Pharmakodynamik." Von Dr. Philipp Friedrich Wilhelm Vogt. Erster Band. 177.

[†] Ibidem, 177.

[‡] "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D.

[§] "Diss. Led. Palustr. in Amœnit. Acad." viii. 156.

[‖] "Recherches Physiologiques et Chémique sur l'Emploi de l'Acide Prussique," &c. Par N. Magendie, D.M. Paris, 1819.

Change of Air.— Change of air ought to be recommended in whooping-cough far oftener than it is, as it proves very frequently the most powerful means we possess of eradicating the disease.

I recollect a young gentleman who was brought by a severe attack of this disease almost to death's door; every variety of medicine which seemed at all suitable for the complaint had been skilfully prescribed and steadily persevered in for many weeks, without diminishing in the smallest degree the violence of the paroxysms: the case, in fact, appeared almost hopeless. Under these circumstances, a change of air was proposed as the only remedy left untried. In the space of a few hours the young gentleman was on the road to Bristol, and so immediate was the effect produced, that he had not reached the end of the second stage of the journey before the paroxysms of cough had materially diminished in force and frequency. From that period he rapidly recovered; and, at the expiration of a week, no trace of the formidable disease was left.

It is not always indispensably necessary, when change of air is indicated, for the patient to go far from home, as a lodging two or three miles distant from his abode will in general enable him to obtain all the benefit which can possibly be derived from this source. Sometimes, however, it is advisable to change an inland for a maritime situation, and occasionally the reverse has been attended with the happiest results.

Diet, &c.— During the inflammatory stage of whooping-cough, the diet must be of a strictly antiphlogistic character; wines, spirits, beer, meat, and spices, being, of course, perfectly inadmissible. When this stage has subsided, and the disease still persists, the diet may be of a more nourishing character.

Cold bathing, especially in the sea, is of essential service in chronic whooping-cough, and has frequently succeeded in eradicating the disease after the failure of every other means. It ought, therefore, always to be tried in obstinate cases, unless some cogent reason contraindicate its employment. If a cold bath cannot conveniently be obtained, a shower bath is a very good substitute, and ought to be had recourse to.

CHAPTER VII.

CROUP.

Preliminary Observations — Anatomical Characters — General, Functional, and Local Signs — Age — Causes — Treatment: Blood-letting, Mercury, Blisters, Emetics, Nitrate of Silver, Tracheotomy — Diet.

THE catarrhal affections with which we have hitherto been occupied, consist essentially of *common inflammation* of the mucous membrane of the air-passages. I come now to speak of *specific inflammation.*

Croup was probably known to the ancients, although there is no *distinct reference* made to it by any Greek, Arabic, or Roman writer: I say *distinct reference,* because I think that Signor Rubini has satisfactorily proven, in his "Riflessioni sulla malattia comunemènte denominata Crup," that Aretæus was somewhat acquainted with it. It was, however, reserved for modern writers to elucidate its real nature.

Anatomical Characters.— Croup is a specific inflammation of the mucous membrane of the bronchial tubes, with exudation of coagulable lymph, which concretes either at the very moment of its formation or shortly afterwards. This false membrane is generally of a yellowish-white colour, but sometimes of a greyish hue: its extent and thickness depend on the violence of the inflammation. In mild cases, it is principally confined to the trachea; in the severer forms of the disease, the under surface of the epiglottis, the larynx, trachea, and principal bronchial tubes, are involved in the inflammation and lined with false membrane. This membrane is frequently seen to assume an arborescent form, and sometimes it represents a perfect cast of the larger tubes. On the removal of the false membrane the mucous membrane is seen red and swollen, but the redness and tumefaction are, for the most part, less marked than in catarrhal affections, and usually terminate abruptly. The false membrane is occasionally separated, in several places, from the mucous membrane by a viscid and sometimes puriform fluid. In the disease denominated false croup, the fluid secreted or exuded does not concrete, but preserves a perfectly viscid character; the symptoms are, nevertheless, precisely similar to those of true croup: so that, unless detached portions of false membrane be expectorated, it would be impossible in the present state of our knowledge to distinguish (except by a post-mortem examination) these diseases from each other.

Two children in one family died of croup whilst under my care, in the year 1838. On inspection after death, not a trace of false membrane was discoverable in either child, so that the diseases were specimens of the variety denominated false croup. Dr. Jones Quain, in his translation of Martinet's "Manual of Pathology,"* mentions a case corresponding with those I have just narrated, which occurred in the Hôpitals des Enfans Malades, in the summer of 1825, and which strongly corroborates the opinion which I have advocated: viz. the impossibility of distinguishing between true and false croup during life, unless a portion of false membrane be expectorated.

General, Functional, and Local Signs.—Croup at its onset, in general, bears a close resemblance to common catarrh. At the expiration of a few hours, but sometimes days, the real nature of the disease becomes manifest by the shrill character of the voice or cough. Sometimes, however, the disease is sudden in its invasion, being ushered in by no premonitory symptoms.

Croup is invariably accompanied by fever; the pulse is quick; the skin hot and dry; and a considerable degree of restlessness usually supervenes. In croup there is always some difficulty of breathing: this is occasionally slight, but sometimes so great as to threaten immediate suffocation,—the degree of dyspnœa being always in proportion to the severity of the disease, and the number and magnitude of the bronchial tubes affected. When the dyspnœa is excessive the extraordinary muscles of respiration are called into play, and the face and neck often become of a purple colour. The jugular veins are turgid, and each act of inspiration is marked by a peculiar croupal sound. The cough and voice also possess, in a very striking manner, the croupal characters. In those very rare cases in which the larynx remains free from the disease, the croupal sounds will, of course, be absent. Occasionally, small pieces of false membrane will be loosened and brought up by expectoration; this may be regarded as a favourable sign; while, certainly, nothing is more dangerous than a want of power to expel the loosened membrane.

---

* "Manual of Pathology." By L. Martinet, D.M.P. Translated, with Alterations and Additions, by Jones Quain, M.B. P. 158.

When the disease attacks the fauces, its progress can be seen. Yellowish spots surrounded by red areolæ are first distinguishable. They increase in magnitude and gradually coalesce, forming a false membrane. If this should be thrown off (which it for the most part is in favourable cases), a secretion of a less plastic character takes place. Occasionally the false membrane is removed by absorption; it then gradually becomes thinner and thinner, and at last totally disappears. In this disease, the chest sounds well on percussion; the only sound at all pathognomonic, revealed by auscultation, is a dry respiration of a tubular or bronchial character.

Age.— Children at the breast appear to be less liable to attacks of croup than those who have been weaned; the susceptibility to this disease again becomes less as they approach puberty. In adults, croup is a rare affection; and if it occur, it is almost always of the variety denominated false,— that is, without plastic exudation.

When croup attacks pregnant women, a false membrane is exceedingly liable to form — a fact noticed by Sundelin, in his editorial observations on Dr. Berends' "Practical Treatise on Medicine."* In early life, one attack of croup strongly predisposes to a second invasion; and I have known the same child to have suffered from false croup several times during the course of a twelvemonth.

Causes.— As croup most frequently makes its appearance in spring, during the prevalence of cold north-easterly winds, and very changeable weather, cold with moisture may be considered the principal excitant of this disease. Exanthematous disorders also seem to give a predisposition to croup.

It appears still undetermined whether this affection can be propagated by contagion or infection, or otherwise. For my own part, after carefully weighing the evidence *pro et contra,* I am inclined to think, that when the fever is of an asthenic character (a character frequently met with in crowded hospitals, and among the poor in confined situations), the disease may be communicated from the sick to the healthy; when, however, the sthenic type prevails, there seems little fear that this may be the case.

---

* Dr. C. A. W. Berends, "Vorlesungen über praktische arzneiwissenschaft herausgegeben. Von Karl Sundelin, Med. Dr." Dritter Band. 152.

Treatment.—Croup requires to be attacked in the most energetic manner, by blood-letting, mercury, and blisters, as soon as the nature of the disease becomes evident. During the second stage of the disorder, emetics may be useful, to assist in the expectoration of the detached false membrane; and the employment of nitrate of silver, when the disease attacks the fauces: occasionally tracheotomy is required to be performed.

Blood-letting.—In a young child blood ought to be abstracted by the application of two or three leeches to the chest. In an adult, a general blood-letting should always precede the topical abstraction of blood, if the disease be at all violent. The quantity of blood required to be taken away depends upon the age and constitution of the sick, and the nature of the epidemic, if one prevail. Should the accompanying fever be of an inflammatory type, blood may in general be abstracted freely; if, however, of a typhoid character, extreme caution must be used, lest the powers of the constitution be prostrated to too great an extent.

Mercury.—Mercury may be regarded as the sheet-anchor in croup, as it is by far the most useful of all the remedies which have hitherto been proposed to combat this truly formidable disease: without it, almost all the cases which occur would terminate fatally; but with it, they may be considered greatly under the control of the physician. Of the various preparations of mercury which have been recommended in croup, calomel and the mercurial liniment are to be preferred. Calomel may be given in the dose of a grain, or two, every hour, till the symptoms abate. If there be an unusual irritability of the stomach present, the mercurial liniment may be used in lieu of it, in the manner already spoken of, under the head of "Acute Mucous Catarrh." When calomel is administered to children, it had better be given in an uncombined state, as it is very rare for it to excite purging; when prescribed for adults, it generally requires the addition of a minute quantity of opium, and the dose need not be repeated oftener than every second or third hour.

Blisters.—Blisters and other counter-irritants may be used with good effect in severe cases, after the abstraction of blood, as they frequently render a repetition of general or topical blood-letting unnecessary.

Emetics. — Spontaneous vomiting has been found to have been attended with the happiest results in croup, and to have rendered the respiration easier.* This fact shews, in a very satisfactory manner, the necessity which exists, in numerous cases, for the employment of artificial vomiting. Emetics may, therefore, be considered of use in changing, in some degree, the nature of the inflammation, in separating any false membranes which may be formed, and finally in expelling them.

Nitrate of Silver.—For the employment of this therapeutic agent, in croup attacking the fauces, the profession is indebted to my much-esteemed and excellent friend Dr. Mackenzie, the celebrated oculist. This gentleman is in the habit of pencilling, once or twice daily, according to the urgency of the symptoms, the whole of the membranes lining the fauces, with a strong solution of nitrate of silver (34). By this means the removal of the false membranes is much facilitated, and their reproduction prevented.†

Tracheotomy.—If the disease persist in spite of the various remedies which may be employed, and suffocation be threatened, the operation of tracheotomy must be performed, on Celsus's principle, that "anceps remedium melius quam nullum,"—a passage frequently quoted by medical writers, although it certainly gives the patient not a much greater chance of surviving than he had before. According to Dozent* (a writer referred to by Berends), the inflammation augments in severity after the operation; to avoid which, Dr. Berends suggests the performance of the comparatively easy operation of laryngotomy.

---

* Dr. C. A. W. Berends, "Vorlesungen über praktische arzneiwissenschaft herausgegeben. Von Karl Sundelin, Med. Dr." Dritter Band. 151.

(34) ℞ Argenti Nitratis, ℈j.
Aquæ Destillatæ, ℥j. Solve.

† "Edinburgh Medical Journal" for April 1825.

Diet.—At the commencement of croup the diet must be strictly antiphlogistic. During the progress of the disorder, if typhoid symptoms manifest themselves, the strength of the patient ought to be supported by sago, tapioca, arrow-root, milk, &c. Should the debility be very great, strong beef-tea, calves'-feet jelly, and wine, will materially aid in supporting the powers of the constitution.

---

* Dr. C. A. W. Berends, "Vorlesungen," &c. 155.

PART SECOND.

DISEASES OF THE LUNGS.

CHAPTER I.

PERIPNEUMONY.

Preliminary Observations — Anatomical Characters: 1st Stage, Engorgement; 2d Stage, Hepatization Rouge; 3d Stage, Hepatization Grise; 4th Stage, Abscess of the Lung — Duration of Peripneumony — Part of the Lung most frequently Affected — State of the Bronchial Tubes — General, Functional, and Local Signs—External Causes of Peripneumony — Age — Temperament — Treatment: Blood-letting, Blisters, &c., Calomel and Opium, Potassio-tartrate of Antimony, Digitalis, Mercury—Diet, &c.

Although peripneumony, or inflammation of the lungs, is one of the most common diseases in temperate and cold climates, its anatomical characters, and the signs by which it can be known, were not thoroughly understood until the appearance of Läennec's work "On Diseases of the Chest."

Anatomical Characters. 1st Stage, or Stage of Engorgement.—The lung is, externally, of a livid or violet hue; internally, it is of a deep red colour;

it is increased in weight and density; it crepitates when handled, but less so than healthy lung; if divided with the scalpel, a sero-sanguineous, frothy fluid escapes in abundance; the cellular, or spongy texture of the lungs, is still visible, except where it may have passed into the second stage.

2*d Stage, or Hepatization Rouge.* — In this stage, the lung is still further increased in weight and density, having a strong resemblance to liver; it no longer crepitates on pressure; its colour externally is less livid and violet than in the first stage. If cut into, the interior presents a mottled appearance. In some parts it is of a deep red colour; in others violet, or of various intermediate shades; the whole being interspersed with white and black spots, the former being caused by the divided extremities of the bronchial tubes, the latter by black pulmonary matter. On tearing a portion of hepatized lung, a granular texture is discoverable, but there is no exudation of sero-sanguineous fluid, although a reddish-coloured fluid can be scraped off with the scalpel. The portion of lung surrounding the hepatized part is sometimes in an emphysematous state. Dr. Skoda, alluding to this last condition, says, "Das letztere geschieht insbesonders haüfig an den Rändern der Lappen." *

3*d Stage: Hepatization Grise.*—The lung presents the same characters, as to weight and density, in this as in the former stage. It is now of a pale yellow, or straw colour, and its granular appearance is more conspicuous. On incising it, a yellowish opaque fluid may be collected on the knife. When the hepatization rouge is passing into the hepatization grise, yellow points of purulent matter are first seen; these gradually coalesce, and at last produce the appearance just described.

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. Joseph Skoda. 216.

4th Stage: Abscess of the Lung.—This is an exceedingly rare termination of peripneumony—so rare, indeed, that I have as yet never seen an instance of it, either in hospital, dispensary, or private practice, during a period of fifteen years. The late Dr. Thomas Davies, alluding to its extreme rarity, remarked that he had not met with a single specimen "after twelve years habitude in post-mortem examinations."* That Läennec firmly believed an abscess of the lung to be an exceedingly infrequent termination of inflammation, can be perceived from the following passage extracted from his work:—"One of the best proofs (says he) which I can give of the rarity of abscess of the lungs is derived from this fact, that, notwithstanding the zeal with which morbid anatomy has been cultivated in France during the last twenty-years, I know of only two well-authenticated instances of this affection besides those above mentioned."* He refers to several cases which occurred in 1823, during the prevalence of a peculiar medical constitution.

---

* "Lectures on the Diseases of the Lungs and Heart." By Thomas Davies, M.D. P. 166.

When inflammation of the lung terminates in abscess, the abscess is seldom large and solitary, but, on the contrary, small collections of pus are usually met with in various parts of the lung. The parietes of these abscesses are formed of pulmonary tissue, filled with purulent infiltration, and in a state of soft detritus, or disorganization.

Duration of Peripneumony.—The duration of the different stages of this disease depends in a great measure on the age, temperament, and mode of life of the patient, and on the nature of the epidemic, if one prevail. The first stage may last only a few hours before signs of hepatization become manifest, or it may prove fatal without running into the second stage. In general, the stage of engorgement persists from twelve hours to two or three days; that of hepatization rouge from one to three or four days; and that of hepatization grise from two days to a week.

It must not be supposed that only one stage can exist at a time; for it very frequently happens that the different stages are all present together. Andral's twenty-third observation is an excellent illustration of this fact, and it shews us how quickly inflammation may terminate in suppuration, if badly treated. "Elle nous montre réunis dans un même poumon," says he, "les trois degrés de l'inflammation, depuis le simple engouement jusqu'à l'infiltration purulente. En moins de six jours, l'inflammation pulmonaire, mal traitée, se termina par suppuration."*

---

* "A Treatise on the Diseases of the Chest," &c. By R. T. H. Läennec, M.D. Translated by John Forbes, M.D.

A portion of lung when once hepatized may continue in nearly the same condition for weeks, and cases occasionally occur in which hepatization has even remained for months, and then ended by resolution; not indeed quite perfect, but sufficiently so to enable the part affected to resume in some measure its proper functions.

When very aged, weak, or cachectic subjects are attacked by inflammation of the lungs, the disease in general runs through the first and second stages with great rapidity; and a few cases are on record in which purulent infiltration took place within thirty hours from the first invasion of the disorder.

Resolution of Peripneumony.—Inflammation of the lungs has a tendency to terminate on the hippocratic days, that is, on the seventh, eleventh, fourteenth, and twentieth day of the disorder. This fact, which was firmly believed by the ancients, has been confirmed by the researches of modern pathologists, particularly M. Andral. When resolution takes place during the first stage of the disease, the red serous fluid which has been poured out is again absorbed; the pulmonary tissue becomes as dry as in the healthy condition of the organ, but it remains for some time redder than usual. A colourless or slightly yellow-coloured serosity succeeds the sanguineous infiltration.

---

* "Clinique Médicale." Par G. Andral, Professeur à la Faculté de Médecine de Paris. Tome i. p. 350.

Should resolution take place during the second stage of the disease, the hepatized parts gradually alter their colour; the deep red changes imperceptibly into violet, violet grey, or various intermediate shades, and finally the part affected assumes its ordinary appearance. While these changes are going on, the induration diminishes, the texture becomes more humid and contains air, and its granular aspect disappears. The resolution of an hepatized lung does not take place in every point with the same degree of rapidity, so that the appearance of the lung is by no means uniform.

When resolution occurs during the third stage of the disease, the part becomes paler, the pus mixed with serum, the granular texture disappears, and air-vesicles are again visible.

Part of the Lungs most frequently affected.—The right lung is much oftener attacked by inflammation than the left, as is evident from the researches of Morgagni, Läennec, Andral, Chomel, Broussais, and others; but it is not quite so satisfactorily determined what part of the lungs is most commonly first invaded, although it will probably be found, when a sufficient number of peripneumonic cases have been registered to enable us to form a correct judgment, that the lower lobes are in general the first involved.

State of the Bronchial Tubes.—The mucous membrane of the bronchial tubes during the first and second stage of inflammation of the lungs is of a bright red colour, and but little swollen; during the third stage it is evidently softened; sometimes its red colour persists, but generally it is much paler than in the first stage.

General, Functional, and Local Signs.—When inflammation attacks the lungs, it is always accompanied by fever, of a greater or less severity, varying according to the extent and intensity of the inflammation. The fever is usually ushered in by shivering, and pain in the back and loins. On the accession of the hot stage, the face is flushed, and there is generally head-ach; the pulse is quick and full, and the urine is high coloured, sometimes blood red. In the severer forms of the disease, the determination of blood to the head is so great as to induce a comatose state—a state exceedingly unfavourable; and the face, instead of being red, has a purplish or slaty appearance. Diarrhœa occasionally supervenes at the termination of the inflammation, although, during the first stage, the bowels may have been constipated. As resolution of the inflammation becomes manifest, the fever for the most part considerably abates; sometimes, however, it persists with little abatement after the peripneumony has diminished in severity.

When the inflammation has passed into the second stage, the synocha which accompanied the disease in its first period in a great measure disappears, only a slight fever remaining.

The general symptoms of the third stage coincide with those of the second; but when the disease enters the fourth stage, or stage of abscess, the fever may assume the hectic type.

The functional signs relate to the cough, expectoration, difficulty of breathing, and pain.

Cough.—The cough is very variable in peripneumony; sometimes it is very distressing to the patient, returns after very short intervals, and proves extremely obstinate; at other times it scarcely amounts to an annoyance. Its severity, however, cannot be considered as a sign of the intensity of the inflammation, any more than its mildness be set down as an index of the insignificant character of the disease.

Expectoration.—The examination of the matter expectorated in peripneumony is of the utmost importance; for by it alone (as Läennec has most correctly observed) the nature of the malady could be recognised during the first stage of the disease.*

The appearance of the sputa is quite characteristic, and differs materially from the sputa expectorated in other pulmonary disorders. Should the sputa be received into a saucer or cup, a mass so viscid and tenacious is formed, that the vessel might be inverted without the sputa being detached. The colour of the expectorated matter is very various, owing for the most part to an admixture of blood.† It is generally of a rusty hue; it may be, however (to use Läennec's words), "sea-green, tawny, orange, saffron, yellowish, or dull green."‡ It almost always has some degree of transparency, and contains air-bubbles, many of which are of considerable size.

The character of the expectoration varies exceedingly, when hepatization becomes manifest. This is not to be wondered at, when it is considered that although one portion of the lung may have become hepatized, another portion may still be in the state of engorgement.

During the third and fourth stages of peripneumony, the expectorated matter closely resembles that of chronic mucous catarrh, and is of a somewhat puriform appearance.

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 220.

† Dr. C. A. W. Berends, "Vorlesungen über praktische arzneiwissenschaft, herausgegeben." Von Karl Sundelin, M.D. Dritter Band. 163.

‡ "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 220.

Difficulty of Breathing.—This symptom is urgent, or the reverse, according to the extent and violence of the inflammation. If both lungs be attacked at the same time, the difficulty of breathing is strongly marked, exceedingly distressing, and often impossible, except in the erect position of the body.* If, on the other hand, a small portion of one lung be alone implicated in the disease, the patient may complain of only a slight shortness of breath. In the former case, the number of respirations in a minute is very much increased beyond the normal standard, and inspiration is performed principally by the diaphragm; in the latter, the ribs only of the affected side are rendered somewhat immovable.

Pain.— The pain in peripneumony is generally dull, deep-seated, and diffused; sometimes, however, it is circumscribed. When an acute pain is complained of, it usually arises from pleuritic combination. Celsus, speaking of inflammation of the lungs, says: "Id genus morbi plus periculi quam doloris habet;"†—an assertion the truth of which is undeniable.

---

* "Nosology." By W. Cullen, M.D. 53.

† A. Corn. Celsi, "Medicinæ," libri octo. Concin. E. Milligan, M.D. 167.

Local Signs.—1st Stage: Engorgement.—Percussion usually yields a perfectly healthy sound. If the engorgement be very extensive, the sound will be somewhat duller than in the normal state; but the difference will be so slight, as to be only detected by a naturally fine and educated ear.

Auscultation affords no index in the stage of engorgement which can be relied on, notwithstanding the assertion of Läennec, that "the crepitant rattle is the pathognomonic sign of the first stage of peripneumony."* I have frequently sought for this sign in cases in which the general and functional symptoms of peripneumony were present, and have often felt much disappointment in not being able to find it. I at first attributed my failure to my want of skill in the employment of the stethoscope, not doubting for a moment the truth of Läennec's assertion,—an assertion which has been considered perfectly orthodox by almost every subsequent writer on chest diseases; but afterwards I felt convinced that Läennec was in error,—an opinion supported by Dr. Skoda of Vienna, the most celebrated German writer of the present day on percussion and auscultation:—"Ich habe (says this physician) das knistern Läennec's bei pneumonien nicht nur nicht konstant, sondern, wenn man sich streng an Läennec's beschreibung desselben hält, sogar ziemlich selten gefunden."*

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 212.

2*d Stage : Hepatization.*—When an entire lung is hepatized, the sound elicited by percussion is perfectly dull, resembling that produced by striking the inside of a person's thigh. If one part be alone involved, the dulness is, of course, heard over that part, and nowhere else.

The degree of dulness depends on the thickness of the hepatization and its distance from the surface. If the thickness exceed an inch, and is superficial, the thigh-sound is produced; if, however, the hepatization be only of small extent and deep seated, the sound will scarcely differ from its normal character.

When the chest is percussed at a little distance from the hepatized part, a clearer sound than usual is frequently heard; this depends on an emphysematous condition of the lung in the immediate vicinity of the hepatization.

No satisfactory conclusion can be arrived at if a dull sound be elicited from the lower parts of the right side of the chest, as these parts invariably sound more or less dull, in consequence of the presence of the liver. Again, no inference ought to be drawn from the clear, tympanitic sound, heard on the left side, at its lower part, as this depends on gas contained in the stomach.

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. J. Skoda. 101.

On applying the stethoscope over the region of the hepatized part, the respiratory murmur can no longer be perceived (if the hepatization be superficial), in consequence of the obliteration of the air-cells; should, however, the hepatization be circumscribed and deep seated, the respiratory murmur can still be heard, as in this case a portion of healthy lung is interposed between the hepatized part and walls of the chest. The respiratory murmur heard in those parts of the lung remaining free from inflammation, is often puerile.

The auscultation of the voice occasionally gives rise to a peculiar thrilling sound in a part in which it is not heard during health. This sound has been named, by Läennec, Bronchophony, and was considered by this writer to be entirely owing "to the fact, that a hepatized lung is *a better conductor of sound* than a healthy one."* Admitting, for an instant, the truth of Läennec's hypothesis, how (it may be asked) can it explain the appearance and disappearance of bronchophony several times in the course of a day, in a part of a lung, the structure of which, in that period of time, has undergone no change? I shall leave the question to be answered by the disciples of Laënnec.

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. P. 214.

That Läennec was in error concerning the sound-conducting property of hepatized lung I shall now endeavour to prove; at the same time, I shall avail myself of the excellent hints on this subject contained in Dr. Skoda's work "On Percussion and Auscultation," and shall make no apology for entering somewhat fully into the doctrine of sound, as the subject is one of the greatest importance.

Sound-conducting Power of different Media.—Gaseous bodies conduct sound better than fluids, and fluids than solids. To elicit a sound, it is indispensably necessary that either a gaseous or liquid body be present—a body, in fact, not only capable of being put into vibration, but adapted to convey the sonorous pulses to the ear. If a bell, for example, be enclosed in the receiver of an air-pump, and then rung, it is heard almost as distinctly as in the open air. Let the ringing be continued while the receiver is gradually being exhausted of the contained air, the sound will become feebler and feebler, and at length almost inaudible. This experiment shews the necessity which exists for a medium capable of transmitting the pulses of a vibrating body to produce the phenomenon of sound.

Sound can be propagated, through the medium of the air, to prodigious distances. The guns of Edinburgh Castle, when fired, can frequently be heard at the distance of between twenty and thirty miles; the sound produced by the falls of Niagara is said to be distinguishable sixty miles off; the barking of dogs has been perceived by aeronauts at an elevation of from three to four miles; Dr. Jamieson mentions that, in a calm day, he heard every word of a sermon at the distance of two miles: but, perhaps, the most astonishing instance on record of the sound-conducting power of the air occurred on the landing of the British in Egypt, under Abercrombie, the cannonading was distinctly perceptible at the enormous distance of 130 English miles!

No one, most assuredly, could be found absurd enough to suppose that it would be possible to hear a cannonading through a mass of earth 130 miles in thickness; and yet this would by no means be impracticable were Läennec's opinion correct.

Perfectly fluid bodies are excellent conductors of sound: this is proven by the acuteness of the organ of hearing in fishes. Experiments are, however, wanting to shew to what extent sounds may be conveyed through the medium of different fluids,—water having almost invariably been the fluid employed in the experiments which have hitherto been made.

Professor Robinson informs us, " that with his head plunged under water he could hear the sound of a bell rung also under water, at the distance of 1200 feet."* It is probable, that if the experiment were made in a large lake during a calm, and an iron cylinder of considerable size filled with gunpowder, exploded, as a substitute for the ringing of the bell, that the sound would be heard at a very great distance; but to render the experiment as unobjectionable as possible, the head of the experimenter should be at a considerable depth under water.

Solid bodies conduct sound but feebly, notwithstanding the assertion made by M. Biot, that he distinguished a sound through iron 2550 feet in thickness.† The experiment made by M. Biot seems liable to a great objection, which renders it, in my opinion, valueless: viz. the employment of iron pipes instead of solid metal; and I hesitate not to say, that if solid rods had been substituted, and all access of air to the sides of those rods carefully prevented, no sound at all would have been audible.

If solid bodies conducted sound better than air, as Professor Läennec asserted, why enclose the swell pipes of an organ in a wooden box?—why employ stuffing between the floor of one apartment and the ceiling of that immediately underneath?—why hold private meetings with closed doors? For the wooden box, instead of deadening the sound of the organ-pipes, would render it far more brilliant, and the ceiling-stuffing and closed doors would produce an effect quite contrary to that which every body knows to be the case,—would, indeed, make a mere whisper perfectly audible.

---

* "Encyclopedia Britannica:" art. "Acoustics."

† Ibid.

I have before observed, that Läennec attributed the phenomenon of bronchophony to the fact that a hepatized lung conducts the sound of the voice better than a healthy lung. This explanation I have shewn to be inadmissible, and at variance with physical laws; how then, it may be asked, is the phenomenon to be accounted for, and how can its repeated appearance and disappearance be explained? I shall endeavour to solve these difficulties. The loose texture of the healthy lung is but ill-adapted for vibration. If the string of a musical instrument be taken, and put but very little on the stretch, it will be found that its vibrating power is inconsiderable, the sound produced is flat and feeble; and it may in this state be compared with the natural condition of the lung — a condition incapable of producing bronchophony, except under peculiar circumstances. If the string be made more tense, it vibrates freely; and the sound elicited is both sharper and louder. To continue the comparison, precisely the same change occurs when hepatization of the lung supervenes; the walls of the bronchial tubes are then surrounded by a firmer texture — a tenser texture — a texture admirably adapted for vibration; and the result is, the sound of the voice produced in the larynx is so much increased by the tense condition of the parts involved in the hepatization, as to be heard in those parts of the chest in which it does not exist in a healthy state of the lungs.

The strength of the vibration is always in proportion to the thickness of the hepatized part. Dr. Skoda, referring to this point, says, "Die stärke der konsonanz wird um so grösser seyn, je dichter das parenchym geworden ist."*

The reason why bronchophony ceases to be heard, after the lapse of a short period, in a part of the lung in which it was distinctly marked, evidently arises from the obstruction of the bronchial tubes with mucus; for, by ordering the patient to cough, the phenomenon for the most part reappears, and again disappears on the renewal of the same cause. According to Läennec's theory, the clogging of the tubes with mucus, instead of intercepting the sound of the voice, would render it more distinct.

When resolution takes place during the second stage of peripneumony, the sound on percussion becomes brighter, and a crepitant rattle is frequently perceptible, *but not always.*

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. Joseph Skoda. 35.

3d Stage: Hepatization Grise. — The local signs in this stage correspond with those of the second stage.

4th Stage: Abscess of the Lung. — When an abscess of the lung bursts into a bronchial tube, and its contents are evacuated, a mucous rattle with large bubbles becomes manifest. If the abscess be near the surface, percussion yields a clearer sound than usual, and the bronchophonism is converted into pectoriloquism. The respiration and cough have now a cavernous character; and the "souffle voilé" frequently becomes distinct.

External Causes of Peripneumony. — Cold and moisture, or long-continued cold, are the chief causes of inflammation of the lungs. This accounts for its frequent occurrence in cold climates, and its rarity in tropical regions. I recollect one case of this disease which was caused by a snowball thrown at a young girl by a boy, for fun; portions of the ball insinuated themselves between her skin and dress, and, gradually melting, gave rise to an attack of peripneumony of extreme severity.

Various medicinal substances injected into the veins, the bite of the rattle-snake, and that of some other poisonous snakes, will produce this disease;

and, strange to say, blood-letting, when carried to a certain extent, will also (as has been satisfactorily proven by Magendie*) induce peripneumony.

Age.—Inflammation of the lungs attacks persons of all ages; but it seems particularly common in infancy and old age. In infancy, the lobular form is the most frequent; in old age, the disease passes through the first two stages into the third, or suppurative stage, usually with great rapidity.

Temperament.—Those of a sanguine temperament, when attacked with peripneumony, for the most part have it in a very severe form; those of a bilious or lymphatic habit, generally much milder.

Treatment.—Blood-letting, blisters, calomel and opium, potassio-tartrate of antimony, and digitalis, are the remedies entitled to our chief confidence in the treatment of inflammation of the lungs.

Blood-letting.—All writers, ancient as well as modern, agree that the abstraction of blood in peripneumony cannot be dispensed with; but there is not the same coincidence of opinion with regard to the quantity necessary to be drawn, and the period of the disease when a further abstraction would not only prove valueless but injurious. The statements of the older physicians concerning these latter points are only of small importance, because practitioners in medicine, previous to the appearance of Läennec's celebrated work, were in almost total ignorance of the signs by which the different stages of peripneumony could be known, and, consequently, they were unable to state exactly at what period of the disease the abstraction or non-abstraction of blood is indicated.

---

* See Magendie's "Lectures on the Blood," published in the "Lancet."

1*st Stage: Engorgement.*—The quantity of blood necessary to be drawn in the stage of engorgement must depend on the severity of the attack, age of the patient, nature of the epidemic, if one prevail, but, above all, on the subsequent treatment as relates to medicines, &c.; for I have found that if proper medicines be energetically prescribed, one venesection, to a considerable amount, even in very severe cases, will almost always suffice: if, however, a "milk-and-water" practice be pursued, repeated blood-letting may be required.

When it is decided on bleeding a patient fully, the advice given by Dr. Marshall Hall (advice which relates to blood-letting in inflammatory disorders) is so truly excellent and scientific, that it ought invariably to be followed. This learned physician says, "Place the patient perfectly upright in the sitting posture, and desire him to look towards the ceiling of the room; having previously prepared the arm, let the blood flow to the most incipient syncope. If the patient be strong, and the inflammation be seated in the serous membranes, or parenchymatous substance of organs, and severe, *much* blood will flow; if the patient be feeble, and the inflammation be seated in the mucous membranes, and be moderate in extent, *little* blood will flow; and not only this, but precisely *as* much and *as* little as the case requires, and the patient can safely bear to lose. If *much* blood has flowed before incipient syncope has been induced, revisit your patient *soon:* you will, probably, have to repeat the blood-letting, in consequence of the severity of the disease, especially if you were not called in early in the first instance. If, on the contrary, *little* blood has flowed, neither does the disease require nor would the patient bear further general depletion."* In those cases in which a second venesection is not indicated, much good may frequently be achieved by the employment of a few leeches to the chest. When the disease is of a mild character, general blood-letting may be dispensed with altogether, and either cupping or leeches substituted, according to circumstances. General blood-letting is, also, for the most part, contra-indicated in old people of a cachectic constitution, and in certain epidemics, when the accompanying fever is wont to degenerate into a typhoid type.

---

* Dr. Marshall Hall's "Lectures." "Lancet," 1837-1838. Vol. i. p. 218.

Blisters, &c. — Blisters ought never to be employed in severe cases of peripneumony, until after general and local bleeding, unless the peculiar nature of the epidemic, if one prevail, age of the patient, or cachectic state of his constitution, forbid the abstraction of blood, as they have invariably been found, when employed at the onset of this disease, to aggravate the fever, without, in the slightest degree, diminishing the inflammation, or rendering the breathing more free. When, however, the febrile symptoms have somewhat abated, blisters will materially contribute to carry off the disease.

It seems a matter of not much importance to what part blisters are applied. In England they are placed as near the seat of the disease as possible. In France and some other countries the inside of the thigh is preferred. Tartar emetic ointment, mustard poultices, and croton oil, may occasionally be substituted for blisters with good effect, and sometimes it will be attended with advantage, "cucurbitulas sine ferro præcordiis admovere."*

Calomel and Opium. — To Dr. Hamilton, of Lynn Regis, the profession is indebted for the introduction of calomel and opium in peripneumony. This gentleman, after having prescribed blood-letting and a cathartic, commenced with calomel and opium; the dose of the former varied from gr. j. to gr. v., that of the latter from a quarter of a grain to a grain. The dose was repeated every six, eight, or twelve hours, according to the urgency of the symptoms.*

---

* A. Corn. Celsi "Medicinæ," libri octo. Concin. E. Milligan, M.D. 167.

The only defect apparent in this treatment is solely attributable to the great interval which is allowed to elapse between the doses. The majority of British physicians of the present day prescribe, in severe cases of peripneumony, two or three grains of calomel, combined with a small quantity of opium, every two hours until a decided effect be produced on the constitution, marked by a slight soreness of the gums. This bold practice, if commenced sufficiently early, will almost always prevent the inflammation running on to the stage of hepatization. Should hepatization however occur, notwithstanding the activity of the treatment, it is generally (according to my experience) but of small extent.

Having now, for a considerable number of years, employed a combination of calomel and opium in inflammation of the lungs, I feel bound to recommend it in the strongest manner; and I can conscientiously say with Dr. Armstrong, "that

---

* "Medical Commentaries," vol. ix.

Hamilton's plan deserves to be written in letters of gold, on account of its great practical utility."*

Potassio-Tartrate of Antimony.—It is uncertain at what period this salt was first used in large doses in inflammation of the lungs, although there is abundant evidence to prove that it was employed in considerable doses by physicians so early as the seventeenth century.† To Rasori however, an Italian physician, seems due the credit of having revived this method of cure, for it had for many years fallen into disuse. Rasori's plan of treatment, somewhat modified, was afterwards adopted by Peschier of Geneva, Hellis of Rouen, Dumangin and Läennec of Paris, Gentile of Naples, and a whole host of practitioners in this country. The result has been to establish a reputation for tartar emetic in peripneumony, which it can never again lose. Is it then, it may be asked, a remedy in this disease superior to calomel and opium? To this question, I should say no, for few private patients in this country will be found to submit to a mode of treatment which is usually (till tolerance be established, which sometimes never occurs) one of great severity. It is true that, occasionally, we meet with patients who bear the medicine without being either vomited or purged; but, generally speaking, the first doses vomit violently; and I have frequently seen cases in which Läennec's plan (which consists in prescribing gr. j. of the potassio-tartrate of antimony, dissolved in a cold weak infusion of orange leaf, sweetened with syrup of marsh-mallows, every two hours, till six doses have been taken), if persisted in, would have been attended by serious, if not fatal, consequences. It is a remarkable fact, however, that persons, when suffering from inflammation of the lungs, can sometimes bear larger doses of the antimonial salt than they could if free from the disease: this circumstance has not only been noticed by Professor Rasori, but attempted to be explained by supposing that the power which the body possesses of sustaining large doses of tartar-emetic, is attributable to the existence of a peculiar diathesis which accompanies the disease, and disappears with it.*

---

* Dr. Armstrong "On Typhus Fever," 2d ed. 244.

† "A Treatise on Poisons." By R. Christison, M.D. 2d ed. 433.

When it is considered advisable to attack peripneumony by the potassio-tartrate of antimony, the salt may be given in the form prescribed by Läennec; but for my own part, I prefer a simple solution of the salt in distilled-water (35). If the medicine be likely to be borne badly, a little syrup of poppies may be added to the mixture (36). The inflammation is never more effectively and speedily controlled than when no manifest evacuation takes place. After the lapse of a few hours an amelioration of all the symptoms in general becomes evident; the medicine may then be given less frequently, but it ought by no means to be discontinued till resolution occur.

---

* "Storia della Febbre Petecchiale." &c. Milan, 1813.

(35) ℞ Antimonii Potassio-Tartratis, gr. iij.
Aquæ Destillatæ, ℥vj. Solve.
Sumat cochlearia magna duo, secundâ quâque horâ.

In the treatment of peripneumony in children, I am in the habit of combining calomel with the potassio-tartrate of antimony, and with the best possible effect; this combination I consider far more powerful than either medicine by itself. The quantity of the antimonial salt must be extremely small, as tolerance (with respect to this medicine) in children is always with difficulty established, and frequently not at all. The prescription (37) answers very well. After six doses of the powders have been taken, the symptoms usually become less urgent; if, however, the disease remain unchecked, the powders may then be

(36) ℞ Antimonii Potassio-Tartratis, gr. iij.
Syrupi Papaveris, ℥j.
Aquæ Destillatæ, ℥v. M.
Capiat cochlearia magna duo, tertiis horis.

(37) ℞ Hydrargyri Chloridi, gr. ix.
Antimonii Potassio-Tartratis, gr. ¼. M.
Et in chartas sex divide, quarum sumat unam, secundâ quâque horâ.

given every hour till a manifest improvement take place. When the powders are administered thus often, it will in general be found advisable to diminish the quantity of the potassio-tartrate of antimony, otherwise the strength of the little patient is liable to be prostrated to a frightful extent.

Digitalis. — I have found digitalis an exceedingly useful medicine in peripneumony, after bloodletting and purging. It lessens the force of the circulation, moderates the cough, and exerts considerable power in subduing inflammatory action. In severe cases I have not trusted to it alone, but have united it with calomel (38). This combination will often render a second abstraction of blood unnecessary. Even in those cases treated according to the calomel and opium plan, a mixture containing digitalis will materially assist the cure (39). The calomel and opium may then be given less often.

(38) ℞ Pulveris Digitalis, gr. iij.
Hydrargyri Chloridi, gr. xxiv.
Conf. Rosæ Gallicæ, q. s.

Ut fiat massa, in pilulas æquales duodecim dividenda, quarum capiat unam, octavâ quâque horâ.

(39) ℞ Tincturæ Digitalis, ♏xxx.
Syrupi Rhœados, ℥j.
Aquæ Destillatæ, ℥v. M.

Capiat partem quartam, sextis horis.

2d and 3d Stages: Hepatization Rouge, Hepatization Grise.—During the stage of hepatization, blood-letting must occasionally be resorted to, particularly in those cases in which a portion of lung may still be in the stage of engorgement; even in the stage of suppuration, Cullen, Andral, and Läennec, are advocates for the abstraction of blood; it is right, however, to mention that many physicians of great eminence are opposed to this practice, and are of opinion that it hastens on the fatal termination. As far as my experience goes, I am inclined to think that a general bleeding in the third stage is seldom indicated, although a topical abstracting of blood may be attended with the happiest results.

The most powerful remedy to restore a hepatized lung to a healthy condition is decidedly mercury. Blue pill and calomel are the preparations which I prefer. As the medicine must, in all probability, be continued for a number of weeks, the dose ought to be repeated just as often as is required to keep up a gentle mercurial action on the system. Some practitioners are of opinion that it is better, after continuing the remedy for two or three weeks, to omit the medicine for a little while, and then resort to it again. This plan may be pursued with advantage, if the strength of the patient be exhausted, or any casualty occur which forbids for a time its further employment;

otherwise I see no good reason for discontinuing the remedy till the resolution be complete.

When I prescribe blue pill in cases of hepatization, I almost invariably combine it with squill, as I think that its action is thereby greatly promoted (40).

From the immense power which dandelion exerts over the absorbent system, it certainly ought to be freely prescribed far oftener than it is. It need not interfere in any way with the mercurial treatment, and may be given every six hours, till the hepatization be removed (41).

Diet, &c. — The diet of the patient during the stage of engorgement must be strictly antiphlogistic; cooling drinks and sub-acid fruits being freely allowed. His apartment should be well aired, and, if there be any tendency to delirium, somewhat darkened, the stimulus of noise being at the same time carefully avoided. During the stage of hepatization, the nature of the diet must depend on the symptoms. If there still remain consider-

(40) ℞ Pilulæ Hydrargyri,
—— Scillæ Comp. āā ʒss. M.

Fiat massa, in pilulas xviii. dividenda, quarum sumat binas, alternis noctibus.

(41) ℞ Extracti Taraxaci,
Mellis, āā ℥ij. M.

Fiat electuarium, cujus sumat cochleare minimum, sextis horis.

able excitement of the arterial system, the diet of the sick should be as antiphlogistic as in the former stage; if, however, the pulse have in a great measure lost its frequency and force, a little chicken, veal, or mutton broth, may be allowed. The period of convalescence will of course require fuller diet; and a country excursion will materially assist in re-establishing the patient's health.

CHAPTER II.

GANGRENE OF THE LUNGS.

Preliminary Observations — Anatomical Characters: Circumscribed Gangrene; α. Gangrenous Eschar; β. Deliquescent Sphacelus; γ. Gangrenous Excavation: Non-circumscribed Gangrene — General, Functional, and Local Signs — Treatment.

GANGRENE of the lungs is an exceedingly rare disease, and never appears to be the termination of common inflammation of the lungs, but seems essentially an idiopathic affection.

Anatomical Characters. — Pathologists have usually considered this disease under two heads: viz. 1. Circumscribed gangrene; 2. Non-circumscribed gangrene.

1. *Circumscribed Gangrene.* — This species is for the most part of small extent, and as its name indicates, circumscribed, having very little tendency to invade adjacent parts. Läennec treated of this species under three varieties: viz. α. Gangrenous eschar; β. Deliquescent sphacelus; γ. Gangrenous excavation.*

α. *Gangrenous Eschar.* — This variety is of a livid colour, irregular in form and size, more humid and compact than healthy lung, and emits a gangrenous odour.

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by John Forbes, M.D. 228.

β. *Deliquescent Sphacelus.*—The eschar is softened, its colour is yellowish green, sometimes streaked with red, and it emits an intolerably fetid odour. The matter soon makes its way either into the nearest bronchial tubes, and being gradually evacuated, leaves an ulcerous excavation, or it bursts into the cavity of the pleura.

γ. *Gangrenous Excavation.*—A gangrenous excavation is sometimes lined with a false membrane, which secretes a dark-coloured and extremely fetid sanious matter; at other times no membrane forms, but the walls of the excavation then secrete the sanious fluid. The texture of the walls is generally granular, sometimes soft and fungoid; occasionally considerable blood-vessels are seen traversing the excavation, and are as completely denuded as they would have been had the scalpel of the anatomist cleanly dissected them; sometimes their coats have been destroyed by an ulcerative process, which has given rise to a fatal hæmoptysis.

2. *Non-circumscribed Gangrene.*—Non-circumscribed gangrene is a still more uncommon disease than the circumscribed. The lung is of a dirty white colour, or yellowish green, bordering on brown or black, often interspersed with portions of

a livid red colour. The pulmonary tissue is more humid and friable than in the first stage of peripneumony, and exhales an excessively fetid odour. Around the gangrene, the lung is usually in the stage of engorgement, sometimes of hepatization.

General, Functional, and Local Signs.—These signs are very variable, and if the fetid odour of the sputa be excepted, are not at all pathognomonic. In general, the disease is ushered in by slight peripneumonic symptoms, accompanied by a feeble pulse and considerable prostration of strength. If the patient be young and plethoric, the fever may be of an inflammatory type, and the peripneumonic or catarrhal symptoms extremely severe. The dyspnœa, whatever be the character of the accompanying fever, in general is but slight, bearing no proportion to the extent or severity of the disease. The local signs are common with those of some other chest affections. Thus, in the first stage, a crepitant, sibilant, or perhaps sonorous rattle may be distinguishable; in the second, when the gangrene has formed an excavation, pectoriloquy may be heard, provided the excavation be neither too large nor too small. If a communication have been formed between the bronchial tubes and the pleura, the *tintement métallique* and *utricular buzzing* are frequently developed, but it is quite possible for these sounds to be produced without the existence of any such communication, as Dr. Williams,[*] Dr. Skoda,[†] and others, have satisfactorily demonstrated.

Läennec supposed that the tinkling could never be produced unless the excavation contained fluid as well as air. This hypothesis, Dr. Skoda of Vienna, has completely upset, and shewn by experiments (which I have repeated and varied, and found correct), that both the *utricular buzzing* and *tintement mètallique* can be imitated with perfect ease, and that for their production the presence of fluid is altogether unnecessary.

If a person speak into a jug of moderate size Läennec's *bourdonnement amphorique,* or utricular buzzing, is instantly produced, this is frequently followed by the *tintement mètallique.* Again, if a person speak into a stethoscope placed upon a stomach or bladder filled with air, the same phenomena occur. Dr. Skoda, referring to these points, says, "Ich glaube, dass die flüssigkeit dabei ganz überflüssig ist. Ein krug kann ganz trocken seyn, oder etwas flüssigkeit enthalten, man bringt die beiden erscheinungen darin gleich leicht hervor; zur erzeugung des metallischen echo im zimmer ist keine flüssigkeit nöthig. Wenn man in ein an einen mit luft gefüllten magen angesetztes stethoskop spricht, so ertönt innerhalb des magen der metallische klang und auch der amphorische wiederhall; der magen möge keinen tropfen flüssigkeit enthalten, oder zum theil mit wasser gefüllt seyn."*

---

[*] "Rat. Expos." 136.

[†] "Abhandlung über Perkussion und Auskultation." Von Dr. J. Skoda. 107.

Treatment.—The treatment of gangrene of the lungs must vary with the type of the accompanying fever. If the fever be a synocha and the peripneumonic and catarrhal symptoms severe, the abstraction of blood and other antiphlogistic measures must be resorted to; if, however, an asthenic state prevail, a tonic and perhaps stimulating mode of cure should be adopted as soon as the nature of the malady has been ascertained.

---

* "Abhandlung über Perkussion und Auskultation." Von J. Skoda. 107.

CHAPTER III.

EMPHYSEMA OF THE LUNGS.

Preliminary Observations — Anatomical Characters — 1. Vesicular Emphysema; 2. Interlobular Emphysema — General, Functional, and Local Signs — Causes — Treatment.

EMPHYSEMA of the lungs is of two kinds, viz. vesicular and interlobular. The first variety is very commonly met with in middle-aged or elderly people, and is essentially a chronic affection; it sometimes occurs in children. The second is usually the result of accident. To Läennec the profession is indebted for the first accurate anatomical description of both varieties.

Anatomical Characters. 1. *Vesicular Emphysema.*—In the portion of lung affected with this organic lesion, the pulmonary vesicles are for the most part dilated, but the dilatation of the vesicles is by no means uniform; some vesicles do not exceed the size of a millet seed, while others are considerably larger. When they appear of great size, they have evidently been produced by the union of two or more vesicles by rupture. Sometimes the dilated cells project from the surface of the lung and are very conspicuous; at other times their prominence is insignificant.

The smaller ramifications of the bronchial tubes, in general, participate in the disease, and are somewhat dilated.

When the thorax of an emphysematous subject is opened, the lungs, instead of collapsing, frequently project from its cavity, on account of the great distension of the air-vesicles, and the lungs themselves, if thrown into water, float on its surface.

The mucus contained in the bronchial tubes is always of a very viscid character.

2. *Interlobular Emphysema.*— Interlobular emphysema consists of an extravasation of air into the cellular membrane of the lungs. The air-bladders (as they may be termed) are much more variable in size, and irregular in figure, than in the vesicular variety, and the infiltration of air may spread from the lungs to the cellular tissue of the entire body.

General, Functional, and Local Signs.—The general signs of vesicular emphysema are extremely equivocal, and the functional scarcely less so, dyspnœa being the only symptom usually well marked; even this is found to vary much in the course of a few hours; for it is invariably aggravated by a hearty meal, strong exercise, intense anxiety, and hard study, while rest and abstinence always tend to render the dyspnœa less urgent. A cough attends this affection: it generally occurs in paroxysms, and is accompanied by an expectoration of viscid mucus; sometimes, however, it is so slight that it is scarcely noticed by the patient or his friends.

If the emphysema be confined to one lung, the affected side is found, by measurement, to be somewhat larger than the sound one. When both are affected, the chest is sensibly rounder than in the normal condition.

Percussion generally yields a clear and bright sound, if the emphysema be not excessive; if however the emphysema be sufficiently great to distend the intercostal spaces, the sound elicited by percussion is not brighter than usual. This assertion may appear paradoxical, but it is no less true. The phenomenon appears to depend on the greater resistance of the integuments of the thorax in this disease than in the healthy condition.

The respiratory murmur in the affected part is either totally inaudible or extremely feeble, in consequence of the air-cells having lost their contractile power.

In the interlobular variety of emphysema, a crepitation may frequently be observed. It is described by Läennec and many subsequent writers to be of a dry character, and is considered as a completely pathognomonic sign of this affection. For my own part, I believe it impossible in very many instances, to distinguish this dry crepitation from the moist variety; they evidently pass into each other imperceptibly. Dr. Skoda, referring to this point, remarks, that he does not know whether it be practicable to distinguish the dry rattle from that caused in the air-cells and minute bronchial tubes by tenacious mucus.* It is evident, therefore, that the dry crepitant rattle is not quite so pathognomonic of emphysema as was once supposed.

The "frottement ascendant et descendant," are also considered signs of this disease: that they are certainly present in some cases of emphysema there can be no doubt; but that they may be also present in some other affections seems equally apparent.

Dr. Reynaud first demonstrated that the cause of the "frottement" was most frequently owing to a rough state of the pleura; and subsequent observers have fully confirmed Dr. Reynaud's views.†

Whenever, therefore, the surface of the costal or pulmonary pleura has lost its smoothness, whether through the developement of osseous, cartilaginous, tubercular, cystic, or other bodies, the "frottement ascendant et descendant" may become manifest. The first of these sounds is heard at the moment of inspiration, and the second during expiration.

If extravasated air infiltrate the cellular membrane of the neck or other parts, a crepitation is rendered evident to the touch.

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. Joseph Skoda. 103.

† Ibid. 116.

Causes of Vesicular and Interlobular Emphysema.— 1. *Vesicular Emphysema.*—This variety of emphysema almost always supervenes to a dry catarrh, which has been severe and of long duration. The disease is generally supposed to be produced in the following manner: — The act of inspiration being strong and powerful, overcomes the resistance opposed by the swollen condition of the mucous membrane of the small bronchial tubes, and forces a quantity of air into the air-cells; as the act of expiration is not so powerful as that of inspiration, the air-cells cannot empty themselves as they ought, and a quantity of air, of course, remains imprisoned. A repetition of those acts, may therefore cause after a time, a permanent dilatation of the cells. Vesicular emphysema occasionally arises in those who are compelled by their avocations to retain their breath for a considerable length of time, as players on wind instruments, jewellers, and others who are constantly using the blow-pipe, divers, &c. Tumours compressing the bronchial tubes are considered among the rare causes of this affection.

2. *Interlobular Emphysema.*— Interlobular emphysema usually occurs suddenly, in consequence of some violent exertion, such as, swift running, the lifting of heavy weights, the straining at defecation, and the efforts of accouchement.

Treatment of Vesicular and Interlobular Emphysema. — 1. *Vesicular Emphysema.* — This disease, as I have already observed, is most frequently engrafted on dry catarrh: the indication of cure, therefore, consists in removing the cause of the disease,—in other words, in directing our attention to the uprooting of the primary affection. For an account of the remedies most suitable in dry catarrh, I must refer the reader to page 52. When vesicular emphysema has been produced by the peculiar avocations of the patient, there is very little chance of doing good, unless he change (at least for a time) his occupation.

2. *Interlobular Emphysema.* — This variety scarcely admits of treatment unless the emphysema spread from the cellular texture of the lungs to that of the neck, or other external parts; a few punctures with a lancet will then liberate the confined air.

Interlobular emphysema cannot in general be considered as a very serious disease, for the effused air is usually absorbed with great rapidity; and every case which has hitherto come under my notice has terminated favourably. The only inconvenience which a patient experiences is a difficulty of breathing, which becomes less urgent as the absorption of air proceeds.

CHAPTER IV.

ŒDEMA OF THE LUNGS.

Preliminary Observations — Anatomical Characters — General, Functional, and Local Signs — Causes: Eruptive Diseases, Contraction of the Heart's Aortic Opening, and some other Heart Affections; Diseases of the Kidneys, Diseases of the Liver and Spleen, Compression of large Venous Trunks, Inflammation of the Cellular Membrane, Debility — Treatment — Diet, &c.

ŒDEMA of the lungs is seldom or never a primary affection; it usually follows in the wake of other disorders, especially of the heart in cachectic subjects, and is almost always accompanied by anasarca.

Anatomical Characters. — The lung is more dense and heavy than in the healthy condition; its colour is pale-grey; it pits and crepitates on pressure, and does not collapse on opening the chest. When incised, a colourless transparent fluid flows out, which is sometimes small in quantity, at other times very considerable, the quantity varying much in different individuals. In recent cases it is frothy, being mixed with air; in chronic, frothy serosity is but seldom seen.

General, Functional, and Local Signs.—When œdema of the lungs is accompanied by anasarca, which (as I before observed) is almost always the case, especially after the disease has existed for a considerable time, the anasarcous symptoms will render the diagnosis extremely easy; if, however, this disease should exist as an idiopathic affection, it requires no ordinary tact on the part of the physician to recognise it; the diagnosis is even rendered still more difficult should the disease happen to be complicated by peripneumony or emphysema.

The respiration is always more or less difficult in œdema: should one lung only be affected, the dyspnœa may not be urgent; when both are involved, the breathing is invariably laborious, and sometimes impossible except in the upright position of the body. There is for the most part some degree of cough, which is followed by an expectoration of an aqueous frothy fluid. Occasionally the cough is either entirely absent, or so slight and insignificant as to be almost unnoticed. When œdema is complicated by peripneumony, the sputa will then be of a mixed character; a glairy fluid of a tawny or rust colour, and extremely tenacious, may, under these circumstances, be blended with the aqueous frothy fluid above described. Should pituitous or chronic catarrh supervene on œdema, the secretion peculiar to these affections will of course be seen in the matter expectorated.

Percussion affords but little assistance in unravelling the diagnosis of œdema of the lungs, and for this reason, that both lungs are almost always simultaneously involved in the disease. If one lung only were affected, the sound elicited by percussion would be evidently duller than in the normal condition of the lung; but the difference would be only slight on account of the air which the air-vesicles always retain when the disease exists in a pure state. If the œdema be complicated by a peripneumony which has run on to the stage of hepatization, a dull sound will become manifest. When, on the other hand, there is an emphysematous complication, the sound may be as clear as if the lung were in a healthy condition.

Auscultation is more to be depended on in œdema of the lungs than percussion. From the great dilatation of the walls of the chest in severe cases, the respiratory murmur is either exceedingly feeble, altogether absent, or completely masked by the presence of a rattle, which has been called by Läennec "*râle subcrepitant*." The bullæ of this rattle appear larger and more humid than those of the crepitant rattle, which occasionally are heard in the first stage of peripneumony. The "subcrepitant rattle" may frequently be distinguished at the lower part of the lungs, when it is inaudible elsewhere. Under these circumstances, the respiratory murmur will sometimes become puerile at the upper lobes of the lungs.

Causes. — The chief causes of œdema of the lungs are: 1, Eruptive Fevers; 2, Contraction of the Heart's Aortic Opening, and some other heart affections; 3, Diseases of the Kidneys; 4, Diseases of the Liver and Spleen; 5, Compression of large Venous Trunks; 6, Inflammation of the Cellular Membrane; 7, Debility, &c.

1. *Eruptive Diseases.* — Scarlet fever is much more frequently followed by œdema of the lungs, and general anasarcous symptoms, than other eruptive diseases. The œdema is almost always occasioned by a granular state of the kidneys, which causes these organs to secrete an albuminous urine; to remove from the blood that principle the presence of which is essential for its healthy constitution, and without which it is in fact poisoned, and rendered unfit for the purposes of life. Serum is, therefore, poured out by the exhalent vessels faster than it is absorbed by the veins, and perhaps lymphatics; dropsy of the lungs and other parts is consequently the result.

2. *Contraction of the Heart's Aortic Opening, and some other Heart Affections.* — Disease of the heart is decidedly one of the most frequent causes of œdema of the lungs, and it is a law in the animal economy that whatever tends to impede the return of blood to the right side of the heart, may give rise to effusion. Suppose, for example, that the aortic opening of a patient be contracted, it is obvious that the left ventricle will not be able

fully to discharge its contents, an accumulation of blood of course takes place, not only in the ventricle, but in the left auricle and four pulmonary veins; the lungs become congested, and œdema of these organs is the result. But the mischief does not stop here; the pulmonary artery, the right cavities of the heart, and entire venous system, are surcharged with blood, and a general dropsy is the consequence.

The following case is an illustration of œdema of the lungs and general dropsy, supervening on a dilatation of the cavities of the heart, and communication between its auricles, with disease of the kidneys.

Mr. W. S., æt. 37, by trade a looking-glass manufacturer, when about sixteen years of age, suffered from dropsy, from which he gradually recovered; sixteen years ago had an attack of pleurisy, for which he was bled, since which time has always felt unwell, being constantly troubled with cough and expectoration. Although hitherto slim, he became gradually very stout. About three years ago, when at work, he felt something give way in his right side; he continued from that time to spit blood at intervals, and his tongue, lips, and face, became of a purple colour, especially after exercise.

At my first visit, December 3d, 1836, I found him sitting in his chair, complaining of great difficulty of breathing, accompanied by considerable pain in the chest. He was much tormented with cough, and the sputa which were expectorated were tinged with blood, and frothy. If the matter expectorated were received into a glass and allowed to stand for a few minutes, it separated into two portions, the lower resembled that in the first stage of peripneumony, but the upper was of a more watery character. His heart beat feebly, but with regularity.

On exploring the chest with the stethoscope, the mucous and crepitant rattles were very generally heard; the heart, however, gave no particular information.

On percussing his abdomen, a very distinct fluctuation was observable, and his scrotum and lower extremities were enormously distended with fluid; the legs and ankles pitting much on pressure. He complained of great coldness in his feet, which he could keep warm only with difficulty; he complained also of being much disposed to sleep, of frightful dreams, and at times of being light-headed.

Appetite bad, bowels bound, urine clear, but coagulates abundantly on the application of heat. As he had been bled by a gentleman before I was called in, I prescribed

Emplastrum cantharidis amplum thoraci.
℞ Elaterii, gr. $\frac{1}{2}$.
Olei Tiglii, gutt. ss.
Hydrargyri Chloridi, gr. v. M.

Fiat massa, et in pilulas duas divide, statim sumendas.

December 4th.—Pills produced eight watery evacuations.

℞ Misturæ Antim. Salin. ℥ss.
Tincturæ Digitalis, ♏v.
Aquæ Puræ, ℥j. M.
Fiat haustus, ter indies sumendus.

December 5th.—Had four stools of a watery character, symptoms much the same.

Venæsectio.
Continuetur mistura.
℞ Pilulæ Hydrargyri, ʒss.
In pilulas sex divide, capiat æger unam, omni nocte.

December 7th.—Four watery stools. In consultation it was agreed to resort again to the elaterium pill, and to give the following draught, three times a-day:—

℞ Aceti Scillæ f. ʒss.
Tincturæ Digitalis, ♏x.
Aquæ Destillatæ, ℥jss. M. Fiat haustus.
Emplastrum picis scrobiculo cordis imponendum.

December 8th.—Pill produced nine watery evacuations, the last three mingled with blood.

December 9th.—In the morning he rapidly grew worse, and died at three o'clock in the afternoon of the same day.

Autopsy forty-three hours after death. When the cavity of the chest was opened, both lungs were found firmly adherent in several places to their respective pleuræ, and the lungs themselves highly vascular, and infiltrated with a frothy serosity of a reddish colour. The heart, which was also firmly attached to the pericardium, was flabby, and had its four cavities somewhat dilated. An opening was found in the right auricle, at the lower part of the fossa ovalis, large enough to admit a goose-quill, and leading obliquely into the left auricle. This communication between the auricles satisfactorily accounted for the purple appearance of the lips and tongue. The abdominal cavity contained but little water; the peritoneal tunic of the small intestines was somewhat vascular. On the edge of the right lobe of the liver there was a tubercle about an inch long, and a quarter of an inch broad, which when cut into, had much the appearance of Medullary Sarcoma; the liver was otherwise healthy. Both kidneys were considerably inflamed and slightly granular. The brain was not examined.

3. *Diseases of the Kidneys.* — I have already remarked, that when the kidneys secrete albuminous urine, œdema of the lungs and anasarca may be the result. Many other morbid conditions of the kidney also give rise to these diseases. Some time ago, I was requested to give my opinion concerning a case of œdema of the lungs and general dropsy, in a boy about eight years of age. After a minute investigation of the history and symptoms of the disease, I was unable to ascertain its cause. The dropsy resisted every means which was employed to combat it, and the patient soon died.

On the examination of the body, I was surprised to find that he had only *one* kidney, and that there was not the slightest evidence to shew that he had ever had more than one. This solitary kidney was of an enormous size; its pelvis was sufficiently dilated to contain a cricket-ball, and its parietes were in many places perfectly diaphanous.

4. *Diseases of the Liver and Spleen.*— Chronic inflammation of the liver, scirrhus of the liver, and induration of the spleen, following long-continued ague, give rise very often to anasarca and œdema of the lungs.

5. *Compression of large Venous Trunks.*— Congestion of the venous system, whether produced by heart disease, or tumours pressing upon large venous trunks, gives rise to an extravasation of serum into the cellular tissue, and may therefore cause œdema of the lungs.

Nothing is more common than to see women dropsical during the latter period of utero-gestation: this is entirely owing to compression of the iliac veins and other large veins in their immediate neighbourhood, by the distended uterus. The course of the blood is impeded, congestion below the obstruction takes place, and serum is poured out. After delivery, absorption speedily removes the effused fluid.

6. *Inflammation of the Cellular Membrane.*— This disease usually terminates in effusion, and is then called, in popular language, inflammatory

dropsy. It is almost always produced by long exposure to cold and wet. It attacks the young and plethoric, is attended by considerable pain, and is not an unfrequent cause of œdema of the lungs.

7. *Debility.*— Debility may also be enumerated among the causes of œdema.

Treatment.— The treatment of œdema of the lungs must depend in every case on the nature of the cause which has produced it.

1. *Eruptive Diseases.*—When œdema of the lungs supervenes after an attack of scarlet fever, it will almost always require antiphlogistic measures; and in my practice I have found that I very seldom have been able to remove, even in the slightest degree, the effused fluid, until after an abstraction of blood.

On the 4th of March, 1841, I was summoned to prescribe for a young gentleman, ten years of age, who had had scarlet fever three weeks previously. The cellular membrane throughout the entire of his body was infiltrated by serum, and his skin in some parts was so extremely distended, that apprehensions were entertained of its bursting. His breathing was somewhat difficult, and a râle subcrepitant was distinguishable at the lower parts of the lungs. Cough slight, with watery expectoration. He complained of considerable pain in his loins; his urine was small in quantity, rather high coloured, and coagulated abundantly on heat.

Thirst considerable; bowels open; pulse quick. The gentleman who had been in attendance, had treated the case by tonics and stimulants; and a nourishing diet, including wine, had been ordered.

Under this plan the poor boy was getting daily worse and worse; and at the time I was called in, he had been given over by his friends. It appeared to me that the treatment was altogether wrong, and that the only chance of saving life was to adopt the very reverse. I ordered blood to be taken away from the region of the kidneys by means of leeches, prescribed an antiphlogistic diet, and the following medicine:—

℞ Pilulæ Hydrargyri, ℈j.
In pilulas quatuor divide, capiat unam, omni nocte.

℞ Aceti Scillæ, ℥ss.
Spiritûs Ætheris Nitrici, ♏xxx.
Aquæ Destillatæ, ℥vss. M.
Sumat cochlearia magna duo, ter indies.

March 5th.—The leeches abstracted a considerable quantity of blood; no pain in back; feels altogether better.

Continuentur pilula et mistura.

March 6th. — Sleeps but little; passes rather more water; in other respects much the same as yesterday.

Continuetur pilula. Repetatur mistura, cui adde Tincturæ Hyoscyami, ♏xxx.

March 8th.—Much the same.

Repetatur mistura. Capiat pilulam, mane nocteque.

March 10th.—Has taken cold; complains of pain in the chest; cough troublesome; mouth slightly tender; dropsical effusion rather increased since last report.

Applicetur emplastrum cantharidis thoraci.
Repetatur mistura.
Omittantur pilulæ.

March 15th.—Pectoral symptoms abated; dropsical effusion diminished; urine still coagulates abundantly on the application of heat; bowels regular.

Omittatur mistura.
℞ Tincturæ Digitalis, ♏xx.
Aceti Scillæ, ʒij.
Spiritûs Ætheris Nitrici, ♏xxx.
Aquæ Destillatæ, ℥vj. M.
Sumat cochlearia magna duo, ter indies.

From this time he rapidly improved, and by the ninth of the following month not a vestige of the disease remained, with the exception of an exceedingly minute quantity of albumen in his urine.

This case is an illustration of the beneficial effects of the topical abstraction of blood and digitalis in œdema of the lungs and anasarca, with an albuminous state of the urine, following scarlet fever. On the 15th of March there was evidently an improvement; but when digitalis was added to the mixture the cure proceeded rapidly.

Dr. Withering, in the year 1799, treated a number of cases of dropsy following scarlet fever by digitalis alone, and says that he does not recollect the medicine to have failed in a single instance. In some, the medicine purged; its diuretic powers were then lost, nor did they again appear until opium was added to the draught, to prevent its running off by the bowels.*

When digitalis is prescribed, the patient ought to be watched very closely, for it is one of those medicines which is extremely apt to accumulate in the system, and produce very alarming symptoms. If the tincture be employed, the dose should not at first exceed five or six minims (42). This may be repeated every six hours, and increased after a time, if deemed necessary. A small quantity of the tincture of opium may be added to each dose of the tincture of digitalis, should it be likely to excite purging (43). This will not only prevent its running off by the bowels, but assist its diuretic powers. The infusion of digitalis is much prescribed by some practitioners; it is certainly a valuable form, as the virtues of digitalis are completely yielded up to boiling water: it has this disadvantage however, it is apt to be of a more variable strength than the tincture. It may be given to the extent of half an ounce every eight hours, mixed with a little syrup of poppies and carraway water (44).

---

* "An Account of the Foxglove, and some of its Medical Uses; with Practical Remarks on Dropsy and other Diseases." By W. Withering, M.D. 25.

(42) ℞ Tincturæ Digitalis, ♏v.
Syrupi Rhœados, ʒiij.
Aquæ Cinnamomi, ʒix. M. Fiat haustus.

(43) ℞ Tincturæ Digitalis,
——— Opii, āā ♏v.
Syrupi Rhœados, ʒij.
Aquæ Cinnamomi, ʒx. M.
Fiat haustus, sextis horis sumendus.

Dr. Blackall, speaking of digitalis, says, "Our first object undoubtedly should be to choose such doses of it as will cure; our second, carefully to avoid such as may act with violence or offence. For it is not always enough to stop its use when this bad effect has taken place; a disgust so excited is generally very permanent, and not merely a disgust, but sometimes a total inability of the stomach to admit the offending substance. Persons who have once suffered in this way, frequently cannot by any persuasion, or even determination of mind, be prevailed on to risk a repetition,—a state very much to be avoided in a disease so liable to relapses, and such limited means of relief." *

(44) ℞ Infusi Digitalis, ℥ss.
Syrupi Papaveris, ʒij.
Aquæ Carui, ʒvj. M.
Fiat haustus, octavâ quâque horâ sumendus.

* "Observations on the Nature and Cure of Dropsies," &c. By John Blackall, M.D. 4th edit. 306.

When œdema of the lungs and general dropsy occur after other eruptive diseases besides scarlet fever, antiphlogistic measures will also for the most part be required, and digitalis, in cases of this description, will prove equally serviceable as in œdema following scarlet fever. It may be given either in the form of powder, infusion, or tincture; by itself, or in combination with squill. If the infusion or tincture be preferred, a little of the spirit of nitric æther may be added to the draught, as it will in general render its diuretic powers more energetic (45).

When the urine is uncoagulable by heat, digitalis will rarely be required, the tincture or vinegar of squill being almost always fully adequate to carry off the extravasated serum; sometimes however, it will be requisite to keep up a gentle mercurial action for a few days. These cases may also be treated successfully by purgatives, the best of which is the cream of tartar united with jalap and a little ginger. The dose should be repeated as often as the patient can bear, till the disease be cured (46). Many physicians trust to

(45) ℞ Infusi Digitalis, ℥ij.
Aceti Scillæ, ℥ss.
Spiritûs Ætheris Nitrici, ʒss.
Aquæ Destillatæ, ℥iijss. M.
Sumat partem quartam, octavâ quâque horâ.

(46) ℞ Potassæ Bitartratis, ʒij.
Pulveris Jalapæ, gr. x.
——— Zingiberis, gr. ij. M. Fiat pulvis.

elaterium, either alone, or combined with calomel (47), and there is no doubt that it sometimes cures the disease; but I regret to add that there is scarcely a medicine in the Pharmacopœia so variable in strength as this drug, and consequently so uncertain in its effects. Gamboge was formerly much employed as a hydragogue purgative, but it is now seldom prescribed. It may be given in the form of pill united with soap, and a little extract of hyoscyamus to prevent its griping (48).

Should œdema of the lungs be produced by an asthenic state of the system after eruptive diseases, tonics will of course be required.

2. *Contraction of the Heart's Aortic Opening, &c.* — Œdema of the lungs depending on heart-disease will frequently prove beyond the reach of medicine. All that can in general be expected in cases of this description, is to smooth the way to the grave.

3. *Diseases of the Kidneys.* — When œdema of the lungs arises from that peculiar state of the kidneys which is accompanied by albuminous urine, bleeding and digitalis, as I before observed, are the remedies most to be confided in. Other

(47) ℞ Elaterii, gr. j.
Hydrargyri Chloridi, gr. iij. M.
Fiat pulvis, alternis diebus sumendus.

(48) ℞ Cambogiæ,
Saponis, āā gr. xij.
Extracti Hyoscyami, gr. viij. M.
Et in pilulas octo divide, quarum sumat binas, bis quotidie.

diseases of these organs must be treated according to the nature of the affection.

4. *Diseases of the Liver and Spleen.*—Œdema of the lungs resulting from disease of the liver or spleen can only be removed by curing the primary affection. Chronic enlargement of the latter organ following an attack of ague, requires the employment of mercury. The iodide of the metal is to be preferred. It should be given in the form of pill night and morning, the dose to begin with ought not to exceed two grains: it may be repeated twice or thrice in the twenty-four hours.

5. *Compression of large Venous Trunks.*—When œdema of the lungs is caused by tumours pressing on large venous trunks, the disease is, of course, perfectly incurable, unless it be practicable to remove these impediments to the free circulation of the blood.

6. *Inflammation of the Cellular Membrane.*—The treatment here is obvious. The inflammation must be reduced by antiphlogistic measures before the slightest hope can be entertained that the effused fluid will be absorbed. The abstraction of blood is therefore indicated; and I should advise it to be taken away in the mode recommended by Dr. Marshall Hall.* Digitalis is also a most valuable remedy in cases of this description; it is powerfully antiphlogistic, and will materially pro-

---

* See Chapter on Peripneumony.

mote absorption. I have treated some cases after venesection on the calomel and opium plan, and with the happiest results.

7. *Debility.*—The œdema of old people, which arises from pure debility, requires tonics and stimulants.

Diet, &c.—The diet of the patient must of course correspond with the rest of the treatment. If the case demand the abstraction of blood and other antiphlogistic measures, food of a stimulating kind is perfectly inadmissible. If, on the other hand, the case require tonics and stimulants, nourishing diet and wine will materially contribute to remove the effusion, and re-establish the patient's health.

Whenever diuretics are indicated, it is indispensably requisite that the patient should drink freely of toast-water, barley-water, tea, &c., for they promote in the most efficient manner the action of this class of medicines.

CHAPTER V.

APOPLEXY OF THE LUNGS.

Definition — Anatomical Characters — General Functional and Local Signs — Common Causes — Predisponent Causes — Treatment — Diet, &c.

Definition.—A simple exhalation of blood from the mucous membrane of the bronchial tubes has been named hæmoptysis. An effusion of blood into the air-cells, apoplexy of the lungs.

Anatomical Characters.—The part of the lung involved in the disease is of a deep red colour, approaching black; its density is considerable—greater, indeed, than lung in the state of hepatization; it is circumscribed, and there is an abrupt line of demarcation between the diseased and adjacent parts; its size is very variable, being sometimes so small as to be easily overlooked; at other times very considerable. When incised, its appearance is perfectly homogeneous, and all trace of bronchial tubes, blood-vessels, and cellular intersections, is lost. The parts surrounding the apoplexy, although not altered in structure, are either somewhat paler than usual, of a natural colour, or injected with a bloody serum.

General, Functional, and Local Signs.—This disease is sometimes preceded by a feverishness; but, for the most part, it is sudden in its invasion, and is not ushered in by any premonitory symptoms. The dyspnœa is usually considerable, and not unfrequently there is danger of suffocation. A sense of oppression in the chest is generally experienced, and the movements of the thorax are irregular. The cough is very variable, and in slight cases, it is frequently more annoying than when the hæmorrhage is great. It is accompanied either by an expectoration of a frothy blood, which may be arterial or venous, or by a sudden discharge of a large quantity of the same fluid; when the latter is the case, it is vulgarly and improperly called "vomiting of blood." The pulse is full and hæmorrhagic.

Percussion yields, for the most part, a perfectly healthy sound; should however the effusion be considerable, a sound more or less dull, will be perceived.

At the commencement of the disease, a râle crepitant can usually be heard; this disappears after a time, and is succeeded by a râle muqueux, with large bubbles. One râle passes into the other imperceptibly; and as it is impossible to say where one terminates and the other begins, in consequence of there being so many intermediate shades of sound between the two, I am inclined to think, from this and other causes, that the râle muqueux is only a variety of the râle crepitant. The seat of the râle crepitant is decidedly in the finer bronchial tubes, and perhaps, air-cells; that of the râle muqueux, in tubes of larger calibre. The difference, therefore, according to my observations, between these rattles, is owing entirely to the difference in size of the tubes where they are seated; and, as there is every variety in size of these tubes, between the trachea, which may be considered the largest of them, and the minute subdivisions which terminate in the air-cells, so there may be every variety of râle, according as the fluid is contained in the larger or smaller tubes.

An absence of the respiratory murmur, together with a dull sound, on percussion, will mark the seat of the apoplexy when the effusion is considerable and superficial; the respiration in other parts of the lung will often, under these circumstances, become puerile.

Common Causes. — Pulmonary apoplexy may arise from a great variety of causes, the principal of which are,—a too plethoric state of the system; excesses in eating and drinking; the suppression of an habitual discharge; violent and long continued bodily exertion; blows and falls on the chest; playing on wind instruments, especially the oboe, bassoon, and trumpet; scurvy; phthisis, &c.

Predisponent Causes.—Those who have a deformed chest, and are of a phthisical habit, are more predisposed to this disease than others.

Treatment. — The treatment of apoplexy of the lungs must depend, in a great measure, on the cause which has produced it. If it should arise from a too plethoric state of the system, blood-letting, purgatives, exposure to cool air, cold drinks, and perfect rest, are all the remedies which in general will be required. If gluttony and wine-bibbing have been the cause, these must be abstained from, and saline purgatives prescribed, with a cool regimen. When the disease has arisen from the suppression of an habitual discharge, means must be employed to restore it; if that be impracticable, another drain must be substituted.

Apoplexy of the lungs, resulting from other causes, may require the immediate employment of an astringent, and I have found that acetate of lead is more to be depended on than any other medicine of this class; I have used it sometimes simply dissolved in distilled water (49), sometimes combined with opium, but most frequently dissolved in weak acetic acid (50). This last combination is decidedly the most valuable, as the acid renders (according to Dr. Mitscherlich *) some of

(49) ℞ Plumbi Acetatis, gr. xij.
Aquæ Destillatæ, ℥vj. Solve.
Capiat partem quartam, quartâ quâque horâ.

(50) ℞ Plumbi Acetatis, gr. xij.
Aceti Destillati, ℥j.
Aquæ Destillatæ, ℥v. Solve.
Capiat cochlearia magna tria, sextis horis.

---

* Muller's "Archiv. fur Anatomie, Physiologie," &c. Nov. 1836. P. 353.

the new compounds, which the acetate forms with organic matters, soluble, which would otherwise remain insoluble.

The dose of the acetate may be three or four grains, three times a-day, or oftener, according to the urgency of the symptoms; and I am happy to say that although I have employed this salt in a vast variety of cases of pulmonary apoplexy, I have never as yet seen it fail; and more than this, I have never met with an instance in which it produced colic, notwithstanding its use was continued for several days. This was probably owing to my purging the patient every other day with castor oil, should the acetate produce constipation, which it is very apt to do.

The acetate of lead has evidently been a favourite medicine with Dr. Paris in the treatment of pulmonary hæmorrhage, as he speaks of it in the highest terms, and recommends it in an unequivocal manner as the most efficient of all known remedies in this disease, — "nil simile, nec secundum." *

The acetate of lead arrests hæmorrhage by its sedative, refrigerant, and astringent properties; it lessens the frequency and force of the pulse, reduces the temperature of the body, diminishes the calibre of the arteries, and consequently closes the orifices which may have given rise to the sanguineous effusion.

---

* "Pharmacologia." By J. A. Paris, M.D. 635.

Diluted sulphuric acid, alum, and the sulphate of copper, are also medicines which are much to be depended on in this disease; diluted sulphuric acid may be advantageously exhibited in infusion of roses (51), and this infusion is decidedly the most elegant vehicle for alum (52). The sulphate of copper should be combined with opium, and administered in the form of pill.

Cases of pulmonary haemorrhage occasionally occur in which it will be advisable to give digitalis. This medicine need not prevent the employment of the acetate of lead, provided the digitalis and acetate are not exhibited together. If it should be thought prudent to try these remedies in the same case, a dose of the acetate should be first given; after the lapse of three hours the digitalis may be administered: another period of equal duration should then intervene between the digitalis and next dose of the acetate; and in this way the medicines may alternate as long as is required, without any fear of their decomposing each other.

Whenever astringents are employed, great attention must be paid to keep the bowels regular; an alvine evacuation ought to be procured at least

(51) ℞ Infusi Rosæ Compositi, ℥jss.
Acidi Sulphurici Dil. ♏x. M.
Fiat haustus, tertiis horis sumendus.

(52) ℞ Aluminis, gr. x.
Infusi Rosæ Compositi, ℥jss. Solve.
Fiat haustus, tertiis horis sumendus.

every other day. Should cathartics be likely to produce much irritation, enemata may be substituted with advantage.

Diet, &c.—The diet must consist of the most simple food and drink, and every thing should be administered cold : in summer, the drink and medicine may be cooled by iced water.

The patient should have no curtains to his bed, and a current of cool air should, if possible, be allowed to pass through his chamber. Perfect rest must be enjoined; and I highly disapprove of the physician annoying the patient by too nice an inquiry into the local signs of the disease, as the nature of the malady is in general sufficiently clear without the aids of percussion and auscultation, and no good end, but much mischief, might result from the examination.

Some practitioners apply to the chest of the patient pounded ice, by means of a large bladder : this practice I think very likely, in a great many cases, to do more harm than good; as a determination of blood to the internal parts may be apprehended, and consequently an effusion.

CHAPTER VI.

ASTHMA.

Definition—Dry Asthma, Humid Asthma, Spasmodic Asthma, Nervous Asthma—Treatment, &c.

The word asthma is derived from the Greek verb *αάζω*, to breathe short, and was, by the older writers, considered as a distinct disease. The following is Cullen's definition:—"Difficult respiration, recurring at intervals, with sense of stricture in the breast; respiration performed with a wheezing noise; difficult cough at the beginning of the fit; sometimes none; free towards the end, and often with a copious discharge of mucus."* This definition, after all, means but little more than an intermittent dyspnœa,—a symptom common to a vast variety of affections of the air-tubes, lungs, and heart, &c. Thus, in dry catarrh there is always a difficulty of breathing, which is augmented by exercise, and diminished by repose; and a patient labouring under this disease is said, in popular language, to have "a dry asthma." Emphysema of the lungs is another cause of dry asthma. Chronic mucous catarrh, chronic pituitous catarrh, and œdema of the lungs, give rise to "humid asthma," and spasmodic catarrh to "spasmodic asthma." Violent emotions of the mind, the odour of certain substances, such as roses, musk, ipecacuanha, &c., have caused another variety of asthma, or intermittent dyspnœa, called "nervous asthma." Diseases of the heart, aneurism of the aorta, tumours developed in the cavity of the chest, empyema, hydro-thorax, diseases of the brain and spinal chord, enlargement of the liver, &c. &c. &c. may also give rise to asthma.

---

* "Nosology." By W. Cullen, M.D. P. 118.

Treatment.—The treatment of asthma must vary with the cause which has produced it; thus, if it have arisen from emphysema, œdema of the lungs, or spasmodic catarrh, the means recommended under these heads must be employed. Nervous asthma is seldom of long duration, and disappears, for the most part, with the removal of the cause which has produced it.

Asthma arising from diseases of the heart or large vessels is generally incurable, and all the physician can reasonably expect, is to render the paroxysms less distressing.

CHAPTER VII.

PULMONARY CONSUMPTION.

Preliminary Observations—Anatomical Characters, Susceptibility of various Organs to Tubercle—Duration of the Disease—Age—What Part of the Lungs is first Involved in the Disease?—General, Functional, and Local Signs—Causes, Proximate, Predisposing, and Common Exciting Causes—Does Peripneumony ever give rise to Phthisis?—Is Phthisis Contagious?—Is Consumption Curable?—Treatment—Is it right to Check Diarrhœa in the latter Stage of Phthisis?—Diet—Change of Climate.

PULMONARY consumption has been computed, by Dr. Young, to carry off prematurely, no fewer than one-fourth of the inhabitants of Europe;* it is therefore a disease which demands the most serious attention of every medical practitioner.

Anatomical Characters.—The anatomical characters of tubercular deposit may be considered with advantage under two divisions,—1. Isolated tubercular matter; 2. Infiltrated tubercular matter.

Isolated Tubercular Matter.—There are three varieties of isolated tubercular matter; viz. 1. Common tubercle; 2. Tubercular granulations; 3. Encysted tubercle.

---

* Dr. Young "On Consumptive Disease." Chap. iii. p 20.

Variety 1. *Common Tubercle: First Stage.*—When a portion of lung, in the immediate vicinity of a large opaque tubercle, is minutely examined, it will frequently be found studded with exceedingly small bodies, having a gelatinous appearance and pearly lustre. Their colour is greyish, with a tinge of red; their form is roundish, or somewhat angular; and they adhere by minute filaments to the adjacent parts. They may be seated in the air-cells, or cellular tissue separating these. When incised, not a trace of blood-vessels is discoverable, and they seem perfectly homogeneous.

Second Stage.—Tubercles in this stage are characterised by granules, almost colourless, or of a greyish hue, roundish form, and semi-transparent; their hardness is considerable, approaching that of cartilage; and they adhere, with great firmness, to the adjacent pulmonary tissue; their size is pretty accurately represented by seeds of millet, and they have therefore been termed "miliary tubercles." They may be few in number, or both lungs may be completely studded with them.

Third Stage.—In this stage, the tubercles become enlarged by deposits on their external surface, and they frequently coalesce, and form irregular masses of very variable size. While these changes are going on, a small yellow speck is seen, generally near the centre of each tubercle, but sometimes at the circumference; this gradually spreads, and finally involves the whole tubercle. Tubercles in this stage are called "crude."

Fourth Stage: Period of Softening.—At whatever part of a tubercle the yellow spot first made its appearance—whether at the centre or circumference—that part is the first softened. The softening progressively extends through the whole substance of the tubercle.

The degenerated or softened matter, appears under two forms; sometimes (especially in scrofulous habits) it is soft and pliable, of a cheesy consistence, mixed with a small quantity of a straw-coloured semi-transparent fluid, occasionally tinged with red; at other times it closely resembles thick pus: it is of a yellow colour, and inodorous.

The softened tubercular matter finally bursts into the neighbouring bronchial tubes, becomes evacuated, and leaves a true tubercular excavation. This excavation is frequently crossed by bands of pulmonary substance crowded with tubercles still in the crude state, and also by blood-vessels of considerable size, but never by bronchial tubes; the blood-vessels are, however, generally forced to the sides of the excavation, and not completely obliterated.

If an excavation exist, destitute of these intersections, it is termed an "unilocular tubercular excavation;" if only one band cross the cavity, dividing it into two parts, the excavation is then called "bilocular tubercular excavation;" and, lastly, if the cavity be intersected by many bands, it receives the name of "multilocular tubercular excavation."

Variety 2. *Tubercular Granulations.*—This variety of tubercles, which is extremely rare, was first accurately described by Bayle.* Tubercular granulations generally exist in countless numbers; they are about the size of millet seeds, of a round or ovoid figure, and extremely uniform in their appearance; they are either colourless, or of a grey hue, and transparent; occasionally they form masses of considerable size, but never coalesce, for on incising a mass each granule is found separated from those adjacent by cellular substance, either perfectly healthy, or only slightly congested. In the centre of each granule is usually to be seen a dark-coloured spot, which disappears as the granule enlarges. Jaundice, according to Läennec, stains the granules yellow, and gangrene imparts to them a brownish or dirty brown colour.†

Tubercular granulations, and the other varieties of tubercle, like the common tubercle, have their periods of crudity and softening; sometimes however, they destroy life before the latter period arrives.

---

* "Recherches sur la Phthisie Pulmonaire." Par M. Bayle.

† "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 281.

Variety 3. *Encysted Tubercle.*—This variety of tubercle is still more rare than tubercular granulations,—so rare indeed, that the generality of physicians pass through life without meeting with a single specimen of it. Louis, the most indefatigable morbid anatomist who ever lived, never met with but one instance during the course of his dissections, which extended through a period of many years; and Läennec confesses to have seen but four or five cases.

The cysts which contain the tubercles are of a semi-cartilaginous texture. On the inside they are smooth, polished, and rugous, and adhere but slightly to the enclosed tubercular matter; externally they are firmly attached to the pulmonary tissue in which they are imbedded.

2. *Infiltrated Tubercular Matter.*—Tuberculous infiltration sometimes exists without the developement of tubercles, but this is exceedingly rare: in general it is found encircling tuberculous cavities. This, like the common tubercle, has its four stages, viz. the first, or gelatiniform; the second, in which the tuberculous matter becomes almost as firm as cartilage; the third, or crude stage; and the fourth, or period of softening. When the tuberculous infiltration is examined during the second stage, it is seen in masses of very variable size, dense, humid, homogeneous, and of a greyish colour, with some degree of transparency, not a trace of organization being discoverable. As the third

period approaches, minute yellow spots are recognised; these spots gradually augment, till the whole mass be converted into yellow tuberculous matter, which finally softens, and is evacuated.

Whether tubercular matter appear under the form of isolated tubercular matter, or infiltrated tubercular matter, its various stages may exist at the same time; thus, in the same lung, one crop may appear softened, another crude, and finally, another gelatinous.

Susceptibility of various Organs to Tubercle.—The lungs are doubtless the organs in which tubercles are mostly developed, not only in man, but animals; and it is a curious fact that there is not an organ in the body which is exempt from the invasion of this most frightful disease; even the bones, muscles, and brain, are occasionally the seat of the malady; but it is a fact equally curious, that whenever tubercles are found in any part of the body, they are sure also to be met with in the lungs. It is true, indeed, that Louis dis covered tubercles on one occasion in the mesenteric glands, when he could not detect them in the lungs; but perhaps this solitary instance would not have been recorded had Louis at that time been aware that tubercles existed at first always in a gelatiniform state, and that it frequently required the aid of a powerful lens to discover them.

Duration of the Disease.—Pulmonary consumption generally proves fatal within a twelvemonth from its first invasion; those patients, however, who survive this period, almost always die before the expiration of the second year. Bayle kept a register of 200 cases of this disease, and found that out of this number, 172 terminated fatally within two years; and further, 124 patients died during the first year, and 48 during the second.*

Age.—To the investigations of Bayle and Louis the profession is indebted for the most accurate register of the period of life at which pulmonary consumption proves most commonly fatal. Out of 223 cases, the deaths were as follows:—

From 15 to 20 years of age, there died ..	21
—— 20 to 30	62
—— 30 to 40	56
—— 40 to 50	44
—— 50 to 60	27
—— 60 to 70	13
Total	223

What part of the Lungs is first involved in the Disease?—This question is easily answered, if reference be made only to the common tubercle; but if reference be also made to the tubercular granulations of Bayle, the question cannot be replied to, in the present state of our knowledge, in a perfectly satisfactory manner.

---

* "Recherches sur la Phthisie Pulmonaire." Par M. Bayle.

When a lung is attacked with common tubercle, the upper surface of the superior lobe is the part most commonly affected, and this is the place where tubercular excavations of the largest dimensions are most usually met with. Occasionally, however, the other lobes are primarily involved; but cases of this description are undoubtedly exceedingly rare.

Excavations, whether existing in the upper or lower lobes of the lungs, are generally situated nearer the posterior than anterior part of these organs. The granulations of Bayle, according to Andral, "Se développent très-fréquemment dans les lobes inférieurs du poumon ;"* and this is one of his reasons for supposing that they are not of a tubercular character, but consist, essentially, of a number of partial inflammations; for, continues he, "si elles" (referring to the granulations) "étaient destinées à devenir des tubercules, on ne voit pas pourquoi des cavernes n'existeraient pas aussi souvent vers la base du poumon qu'à son sommet."†

General, Functional, and Local Signs.—There are no signs, whether general, functional, or local, which can inform the physician, to a certainty, of the existence of phthisis in its first stage; and perhaps I should speak the truth if I should say, that very often the signs, even in the second stage, are extremely equivocal. When however, a person who has a narrow chest becomes gradually emaciated, and is troubled with a short dry cough, which has persisted for a considerable time, and is aggravated by every slight cold, I begin to suspect the presence of tubercles; my opinion is strengthened, if there be a sense of pain and oppression in his chest, hectic symptoms, and one or more members of his family have already fallen victims to the disease; still however, the evidence is not perfectly conclusive, and it is impossible to say, to a certainty, what the precise nature of the disease is, until the signs furnished by percussion and auscultation be sufficiently decided to reveal its real character.

---

* "Clinique Médicale." Par G. Andral. Tome ii. 5.

† Ibid. 5.

When the disease is fully established, the hectic fever is always well marked, and there are generally two paroxysms in the twenty-four hours; that at noon, is sometimes so slight as to be easily overlooked, and it very seldom equals the evening paroxysm in severity. A fit of hectic essentially consists of three stages; viz. a cold, a hot, and a sweating stage. The hectic paroxysm, in phthisis, frequently corresponds to this definition, but not always, for the cold stage at noon is sometimes wanting, even in those cases in which the succeeding stages are well marked; occasionally the first and second stages are also absent, and the only indication that there has been a paroxysm, is a trifling augment of the perspiration. The evening paroxysm commences about five or six o'clock, generally with horripilations and a sensation of cold, although, to the hand of the attendant, the skin may seem to possess its natural temperature. The pulse is feeble; and, if urine be voided, it is generally of a pale colour. The evening, like the noon paroxysm, may be without the cold fit, but this is not often the case. The cold stage usually lasts about an hour, and is succeeded by the hot; a general heat now diffuses itself over the entire body, but, as Dr. Berend has correctly observed, this is chiefly felt in the cheeks, palms of the hands, and soles of the feet; his words are—"Die hitze wird besonders in den wangen, handflachen, und fuszsohlen empfunden."* The patient is usually restless, and complains of uneasiness and thirst; the mouth feels parched, and the tongue is covered with a white fur; the pulse is small and frequent, varying from 100 to 130, or more, in a minute, and the urine is high-coloured. At ten, eleven, or sometimes as late as twelve o'clock, the heat diminishes, and a perspiration breaks out: this is followed by sleep. The perspiration, which at first was only partial, becomes universal during sleep; so that when the patient awakes in the morning, he finds himself, to use a common expression, "bathed in sweat."

---

* Dr. C. A. W. Berends, "Vorlesungen über praktische arzneiwissenschaft herausgegeben. Von Karl Sundelin, M.D."

The other general signs of phthisis have been graphically and elegantly delineated by Aretæus. I shall give Dr. Young's translation,—"The teeth increase in transparency, and the sclorotica of the eye is pearly-white; the fingers are shrunk, except at the joints, which become prominent; the nails are bent for want of support, and become painful; the nose is sharp, the cheeks are red, the eyes small, but bright, the countenance as if smiling; the whole body is shrivelled, the spine projects instead of sinking, from the decay of the muscles, and the shoulder-blades spread out like the wings of birds."* During the last stage, a colliquative diarrhœa sets in, which rapidly prostrates the remaining strength of the patient; and, if this be injudiciously checked by astringents, dropsy invariably supervenes.

The *functional signs* relate to the cough, expectoration, voice, and dyspnœa.

Cough.—The cough, at the commencement of phthisis, is generally slight and dry; but in the progress of the disease it usually becomes more troublesome, especially if the larynx be in an ulcerated state.

---

* Dr. Young "On Consumptive Diseases."

Expectoration.—At the onset of this malady, the expectoration, like the cough, is usually slight; but as the disease advances, it is for the most part, copious; cases however occasionally occur, even of "galloping consumption," where the expectoration is either altogether absent, or extremely trifling.

In May 1840, I was requested to see a young lady, who was represented to have a bad cold. An attentive examination revealed the developement of tubercles at the upper part of the anterior superior region, on the left side; in a short time tubercles were also discoverable in the same region on the right side. The disease advanced so rapidly, that she fell a victim to it within three months from the time I was called in. During the whole progress of the disease, from the commencement to the termination, there was an *almost complete absence of expectoration.*

When the expectorated matter of a patient with softened tubercles is examined, it will be found to have very various appearances; this is not to be wondered at, when it is considered that it is derived from very different sources: 1st, there is generally a pretty copious secretion poured forth from the mucous membrane of the trachea and bronchial tubes; 2dly, there is frequently pure pus secreted by ulcerations in the larynx and trachea; 3dly, there is softened tubercular matter, having a cloudy and flaky appearance; and, 4thly, there is sometimes blood expectorated with the other fluids.

Voice.—The voice is extremely variable in consumption: sometimes it continues strong to the last; at other times it is completely reduced to a whisper from the onset of the disease, or flat and hoarse. The whispering, or hoarse voice, when sudden in its invasion, almost always depends on relaxation of the ligaments of the glottis, or some lesion of the recurrent nerves. If, on the contrary, its invasion be gradual, there is reason to suspect an ulcerated state of the larynx.

Dyspnœa.—Dyspnœa, like the other functional signs of pulmonary consumption, is extremely variable. In general it is not a source of great annoyance to the patient, unless he use considerable exertion, even when the greater part of both lungs is involved in the disease. This evidently arises from the small quantity of blood circulating in the system. Occasionally, however, the dyspnœa is distressing, no doubt from the impossibility of clearing the bronchial tubes of their contents. All the extraordinary muscles of respiration are then called into play, and the patient will request, even in cold weather, the windows of his apartment to be thrown open, to enable him to breathe freely.

Local Signs.—Percussion yields, in the earlier stages of this disease, a perfectly healthy sound; but, as the tubercles increase in magnitude, the sound is duller than usual; when cavities form, the sound will of course be brighter than in the normal condition.

Absence of the Respiratory Murmur.—During the first periods of pulmonary consumption, the respiratory murmur can be distinctly heard; but when the tubercles augment, so as to form considerable masses, the respiratory murmur is evidently lost in the parts involved in the disease. The axillary and superior anterior regions are those which the auscultator ought particularly to examine, as the respiratory murmur first becomes inaudible there.

Bronchophony.—When a person speaks who has the upper part of his lungs studded with tubercles in the crude state, the bronchophony of Läennec may frequently be heard on the application of the stethoscope to the chest. This name I retain out of respect to the memory of the celebrated professor who gave it, although I am convinced, from long experience as an auscultator, that it is absolutely impossible to distinguish bronchophony from either imperfect or doubtful pectoriloquy; and, more than this, I hesitate not to say that pectoriloquy, even in its most perfect state, is only another degree of bronchophony. Therefore, in my opinion, they differ not in kind, but in intensity. Dr. Skoda of Vienna is a strong advocate for the abolition of one of these terms; for the retention of both of them, according to this learned man, must lead to error.*

When bronchophony is heard only at the root of the lungs, no inference should be drawn from this fact, as the phenomenon is usually to be perceived in this situation in a perfectly healthy condition of the lungs.

Signs of the Softening of Tubercles.—At the commencement of the softening period, the local signs undergo no change; but on requesting the patient to cough, a gurgling noise becomes evident, which conveys to the ear of the observer an impression that the matter giving rise to the sound has considerable consistency. After the lapse of a few days the gurgling rattle is gradually converted into a mucous rattle, with large bubbles.

Tubercular Excavation. — When a cavity is once formed, the respiration and cough always assume the cavernous character, provided the cavity be of certain dimensions. Percussion (if the cavity be considerable) may yield a brighter sound than in the normal condition; this is however, not invariably to be looked for, in consequence of tubercular masses of large size frequently surrounding the cavity. Pectoriloquy usually becomes manifest as the cavity empties itself; but if the excavation be very large, a diffused bronchophony is only heard. This is a convincing proof that both sounds depend on the existence of cavities, and are only varieties of each other. If a cavity be small, bronchophony is heard; if it be a little larger, pectoriloquy becomes manifest; and, again, if it be still larger, pectoriloquy will disappear, and bronchophony be restored.

---

* "Abhandlung über Perkussion und Auskultation." Von Joseph Skoda, M.D.

When an excavation is of considerable size, superficial, and contains air communicating with the bronchial tubes, "das geräusch des gesprungenen topfes" of the German writers is heard on percussion, provided the corresponding part of the walls of the thorax be supple, and be percussed with a force sufficient to compress at each blow the parietes of the excavation to a certain extent. This peculiar sound is owing to the resonance which an excavation yields when percussed, mingled with the sound arising from the sudden transit of a portion of the air of the excavation into the neighbouring bronchial tubes.

The "sound of the boiling pot" can be imitated by percussing the cheek of a person who has his mouth partly open.

If the excavation contain fluid as well as air, a sound resembling that produced by saliva moved in the mouth by the lips and tongue is elicited.

Causes.—The causes of pulmonary consumption are extremely numerous. They may be divided into proximate, predisponent, and common exciting causes.

With regard to the first or proximate cause of consumption, the profession is as much in the dark as ever, notwithstanding the microscopic investigations of M. Rochoux, and other distinguished French pathologists. Tubercular matter consists principally of coagulated albumen;* this matter is therefore, in a way which in the present state of our knowledge, does not admit of explanation, poured out by the capillary arteries, and constitutes tubercle.

Predisponent Causes.—Pulmonary consumption is decidedly an hereditary disorder, and is transmitted from father to son with almost the same regularity as other legacies. Whenever I see the consumptive diathesis strongly marked in either parent of a numerous family, I generally find several of its members prematurely cut off by the disease.

Rapid growth is justly considered a predisponent cause of phthisis. A few years ago a young pupil of mine was observed to grow with astonishing rapidity. He seemed, however, to be in the enjoyment of perfect health, when he unfortunately took typhus fever; of this he died. On opening his chest, the lungs were found studded with tubercles in the miliary stage.

The depressing passions are also predisponent causes of phthisis. Läennec mentions in his inimitable work a striking instance confirmatory of this assertion.

---

* Dr. Abercrombie on the Nature, &c. of Tubercular Diseases, in Edinburgh Med. Chir. Transactions, i. 682.

A religious association of women was formed, the rules of which were remarkable for their severity. The diet of these persons was also severe, but, says Läennec, "the ascetic spirit which regulated their minds was such as to give rise to consequences no less serious than surprising. Not only was the attention of these women habitually fixed on the most terrible truths of religion, but it was the constant practice to try them by every kind of contrariety and opposition, in order to bring them as soon as possible to an entire renouncement of their own proper will. The consequences of this discipline were the same in all. After being one or two months in the establishment, the catamenia became suppressed, and in the course of one or two months thereafter, phthisis declared itself."*

Common Exciting Causes.—The common exciting causes of phthisis, although extremely numerous, are not in general sufficient to induce the disease, unless there be a predisposition to it existing in the constitution at the time. Cold with moisture, sudden changes of temperature, mechanical irritation produced by the constant inhaling of fine particles of dust in certain manufactories, violent and long-continued efforts in singing and playing on wind-instruments, the suppression of habitual discharges, the sudden disappearance of chronic eruptions, and I may add the absurd and fashionable practice of ladies in the upper walks of life appearing in the morning in high, and in the evening, low dresses, may all prove exciting causes of pulmonary consumption.

---

* "A Treatise on the Diseases of the Chest," &c. By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 3d ed. 334.

Does Peripneumony ever give rise to Phthisis? I believe that common tubercle is never produced by peripneumony, for if it were, it would be as frequently developed in the inferior lobes of the lungs as it now is, in the superior; and I am also inclined to think that Andral is wrong in supposing that the granulations of Bayle are owing to a great number of partial inflammations.*

Is Phthisis Contagious?—Pulmonary consumption is decidedly not a contagious disease, if the word contagious be used in the sense in which it is originally employed in medical writings. If, however, a predisposition to the disease exist in a person's constitution, I am inclined to think that a person so circumstanced, by sleeping in the same bed with a patient in the latter stage of phthisis, runs a risk of calling into action a disease which might otherwise have lain perfectly dormant. For this reason, and for others which I might name, I invariably recommend the sick to have a separate bed when practicable.

---

* "Clinique Médicale." Par G. Andral. Tome ii. 5.

Is Consumption Curable?—Nature sometimes, though rarely, effects a cure; art never does. When nature effects a cure, it is generally by uniting the parietes of an excavation, and forming an internal cicatrix. In this way cavities of considerable size have been obliterated.

Treatment.—I have just remarked that art is unable to cure consumption. Are we, therefore, it may be asked, justified in allowing the disease to take its own course? Certainly not; for, although we are unacquainted with any therapeutic agents by which this disease can with a certainty be subdued, still we possess many which, when judiciously employed, may assist nature in her efforts to accomplish this desirable end. The first grand indication in phthisis is evident; viz. to prevent a further deposition of albuminous matter—matter which constitutes tubercle; the second, to moderate the cough; the third, to assist expectoration; the fourth, to support the strength of the patient; and, the fifth, to excite a change of action.

1. *To prevent a further Deposition of Albuminous Matter.*—When tubercular matter has once been deposited, it is always liable to augment by fresh depositions on its external surface. This augmentation is usually more considerable

striking when an attack of peripneumony has supervened. I therefore admit, that although peripneumony cannot produce tubercle in the first instance, yet, when tubercular matter has once been deposited, inflammation is the principal cause of fresh depositions; it is obvious, therefore, that the attention of the practitioner ought to be directed to remove, at the onset, inflammatory action, whenever it is found to exist. This is to be achieved by blood-letting, general or local, as the urgency of the symptoms may demand, digitalis, calomel, and opium, &c.; in fact, by the remedies recommended under the head of peripneumony. Now, with regard to the quantity of blood necessary to be abstracted, the greatest diversity of opinion still exists among medical men. Some, but very few, adopt the bold and rash practice of Dr. Dover, and bleed their patients forty or fifty times in succession; others seem satisfied with the employment of a few leeches occasionally; and others, again, are so fearful of diminishing the powers of the sick, that they adopt what is termed "a milk-and-water practice;" in other words, let the disease take its own course.

It appears to me that, when the pulse is full and strong, and the dyspnœa considerable, it is perfectly justifiable to open a vein in the arm, and allow a considerable quantity of blood to flow, and that cases may occasionally occur which may demand a second, or perhaps, a third venesection; but I have never as yet seen cases which have required a further loss of blood than that just mentioned, within a short period, if suitable medicines have been prescribed; and I must protest against bleeding human beings like calves. If the peripneumonic symptoms be mild, a topical abstraction of blood will only be required, for this will answer every useful purpose without prostrating the powers of the constitution.

Digitalis is a favourite medicine, with most practitioners, in the treatment of phthisis, and there is not the slightest doubt that it frequently renders blood-letting unnecessary. Even should severe peripneumonic symptoms manifest themselves, and demand venesection, the timely use of digitalis will materially aid in curbing the inflammation, and ought therefore, never to be omitted. I have sometimes thought that digitalis, by exerting a peculiar power over the capillary vessels which deposit tubercular matter, has so changed their action, that they have altogether either ceased to secrete albumen, or that the secretion has proceeded much slower than before the system was under the influence of this powerful drug. There is not the slightest doubt that digitalis is the remedy most to be depended on, in cases of albuminous urine; why therefore, I may ask, if it exert so beneficial an influence over one class of capillary vessels, should it not over another? and why should it not tend to prevent albuminous deposits in the lungs?

Calomel and opium must be used with a much more sparing hand if employed to combat the peripneumonic symptoms, which so frequently attend phthisis, than if peripneumony exist as a pure disease; for I feel confident that every preparation of mercury rather aggravates than ameliorates pulmonary consumption—rather, in fact, aids the capillaries in pouring out albuminous matter than prevents their secretion of it. Cases nevertheless, occasionally occur, accompanied by such severe inflammatory symptoms, that the employment of calomel is not only perfectly justifiable, but imperative, and that, were its use neglected, the inflammatory symptoms would be with extreme difficulty—perhaps not at all—controlled.

Blisters, and other counter-irritants, are powerful means of subduing the peripneumony which so frequently exists with tubercular deposits; they may either be used in severe cases, immediately after a general or topical abstraction of blood, or in cases of a milder description, without previous blood-letting.

Small blisters, of an oblong shape, placed directly under the clavicles, afford the greatest relief, and are in general submitted to by patients without hesitation. The ointment of tartarized antimony and croton oil, either in the pure or diluted state, according to the exigencies of the case, are also powerful therapeutic agents, and may be prescribed, should the patient be unwilling to submit to blistering. In very mild cases, a sufficient degree of counter-irritation may be produced by the galbanum, or pitch plaster.

Nauseating medicines, such as the potassio-tartrate of antimony and ipecacuanha, are also excellent adjuvants in subduing inflammation, and may be prescribed as often as is necessary to keep the system under their influence.

2. *To Moderate the Cough.*—Opium, extract of lettuce, henbane, conium, digitalis, belladonna, and prussic acid, have all been employed for the purpose of moderating the cough in pulmonary consumption; of these, opium is decidedly entitled to our greatest confidence, as it is more to be depended on than the other remedies in this list; it has, however, one disadvantage; namely, that of constipating the bowels—a disadvantage not possessed by any of the others. Opium, when employed for the purpose just mentioned, should never be given by itself, but united either with ipecacuanha, tartarized antimony, or squill. If it should cause head-ach, its active principle, morphia, may be prescribed instead (53). Extract of

(53) ℞ Morphiæ Hydrochloratis, gr. ¼.
Pulveris Ipecacuanhæ, gr. j.
——— Acaciæ, gr. iij. M.
Fiat pilula, secundum artem.

lettuce is a favourite narcotic with me; it is exceedingly mild, and allays the cough of phthisis, in a tolerably effective manner, and without producing a loathing of food,—an occurrence by no means unfrequent after the employment of opium. Hemlock and henbane are excellent substitutes for opium when it disagrees; they may be used, either in the form of tincture or extract. The tincture of these vegetable substances is to be preferred, as its strength is tolerably uniform, and can therefore in general be depended on; this however, is not the case with the extracts, as they are found to vary in strength in almost every shop, and even in the same shop, at different times. I may be permitted here to observe, that if the extracts employed have been prepared by the ingenious chemist Mr. Laming, their strength is extremely uniform, and they will remain good for years; if, on the other hand, the extract of hemlock have been made according to the ordinary cooking process, and allowed to remain in a covered jar for a few months, myriads of acari will in general make their appearance, and of course render the extract unfit for use.

Belladonna certainly possesses considerable power in moderating the cough in phthisis, and ought to be prescribed much more frequently than it is. Its effects however, should be very carefully watched, for belladonna, like digitalis, is an exceedingly powerful remedy, and is apt, if not employed with the greatest caution, to prostrate the powers of the constitution to a frightful extent. The eighth part of a grain of the extract is a proper dose to begin with; it may be gradually augmented till half a grain be taken every eight or ten hours. A few patients will occasionally be found to bear a larger dose than this. Should delirium supervene during its use, or should the patient complain of a tightness or dryness in the throat, the further use of the drug (at least for a time) must be discontinued. In those cases in which the internal exhibition of belladonna is attended with inconvenience, it may be advantageously used in the form of plaster.

Prussic acid, or, as it is now called, acidum hydrocyanicum dilutum, has been long used in phthisis under the form of distilled laurel water, but the attention of the profession was more particularly directed to this therapeutic agent in the treatment of pulmonary consumption by Dr. Granville. According to this gentleman, prussic acid is a valuable and powerful remedy in checking the progress of phthisis when in the incipient stage. It acts as a sedative on the nervous system, diminishes irritability, and lessens the force of the circulation.*

The high encomium passed on the acid by Dr. Granville induced medical practitioners, not only here, but in France and Germany, to use it much more extensively than had hitherto been done. The result has shewn that the praise bestowed on the remedy was unmerited, and that although the acid is occasionally of some small service in phthisis, in general its employment is followed by disappointment. Dr. Pareira, speaking of hydrocyanic acid in phthisis, says, "Occasionally I have seen the cough and sweating in phthisis temporarily relieved; but this is the utmost observed from its employment."[*] This assertion is the result of careful observation, and I feel convinced will agree with the experience of the generality of practitioners.

---

* See Dr. Granville's "Historical and Practical Treatise on Hydrocyanic Acid."

When it is deemed advisable to prescribe prussic acid, it may either be given in distilled water (54), or in almond mixture (55). The former of these prescriptions is better adapted for irritable stomachs.

3. *To assist Expectoration.*—Throughout the whole course of phthisis there may be occasion for the employment of medicines denominated expectorants, should the bronchial tubes be obstructed by mucus. When the tubercles soften,

---

[*] Dr. Pareira's Lectures on Materia Medica in "Medical Gazette," vol. xvii. 715.

(54) ℞ Acidi Hydrocyanici Diluti, ♏xij.
Aquæ Destillatæ, ℥vj. M.
Sumat partem quartam, sextâ quâque horâ.

(55) ℞ Acidi Hydrocyanici Diluti, ♏xij.
Misturæ Amygdalæ, ℥vj. M.
Capiat cochlearia magna tria, octavâ quâque horâ.

there seems however, a still greater necessity for their use, particularly if the dyspnœa be at all urgent. Cases occasionally occur in which it may be imperative to procure expectoration by means of emetics, the ordinary expectorants either being too feeble or too slow in their action to produce the desired effect. The emetic expectorants which have been most prescribed are the potassio-tartrate of antimony, the sulphate of zinc, and the sulphate of copper. Of these the potassio-tartrate of antimony is much to be preferred when inflammatory symptoms are present, as it not only will act with great certainty in clearing the bronchial tubes of their obstructions, but will prove extremely useful in subduing inflammatory action. Under the head of Peripneumony I have spoken at great length of the utility of the potassio-tartrate of antimony in arresting the disease, it therefore remains only for me to say in this place that when peripneumony supervenes in a case of phthisis, the antimonial salt will subdue the inflammation almost as quickly as if the disease existed in an uncombined state. The dose of the potassio-tartrate of antimony should not exceed half a grain, it may be repeated at the expiration of three or four hours, should the tubes be again obstructed, or the inflammatory symptoms urgent.

When there is a difficulty in bringing up the softened tubercular matter, and considerable debility is present, the sulphate of zinc or the sulphate of copper may be prescribed. Some practitioners prefer the former of these salts, some the latter, and others again combine the two (56).

In ordinary cases, the common expectorants will answer every purpose, as our only aim is to assist nature. They may be either exhibited by themselves, or united with demulcents or narcotics according to circumstances. The prescriptions marked 57, 58, 59, and 60, may prove useful.

(56) ℞ Zinci Sulphatis, gr. v.
Cupri Sulphatis, gr. iij.
Aquæ Puræ, ℥jss. M.
Fiat haustusemeticus.

(57) ℞ Tincturæ Scillæ, ʒj.
Vini Ipecacuanhæ, ʒjss.
Syrupi Tolutani, ʒvj.
Aquæ Destillatæ, ℥v. M.
Capiat cochleare magnum, tertiâ quâque horâ.

(58) ℞ Aceti Scillæ, ℥ss.
Tincturæ Conii, ʒj.
Syrupi Mori, ℥jss.
Aquæ Destillatæ, ℥jv. M.
Capiat cochleare magnum, urgente tussi.

(59) ℞ Cetacei, ʒjss.
Vitelli ovi q. s. ad solutionem, et adde
Aquæ Destillatæ, ℥v.
Tincturæ Scillæ,
———— Hyoscyami, āā ʒj.
Syrupi Tolutani, ʒjs. M.
Sumat cochlearia magna duo, ter indies.

(60) ℞ Decocti Senegæ, ℥v.
Syrupi Tolutani, ℥js. M.
Sumat partem quartam, sextis horis.

4. *To support the Strength of the Patient.*—The medicines which have been employed with this intention are tonics derived from the vegetable kingdom. Those are the most prized which possess demulcent as well as tonic properties, such as the cetraria islandica, and some other species of lichen. When it is determined to employ the cetraria, it is an excellent plan to boil it for five or ten minutes in water. The water is then to be poured off. The cetraria is by this means deprived of a portion of its bitterness, and rendered of course much more palatable. It may be then boiled in a fresh portion of water for a sufficient time to form a mucilage. Two ounces of the cetraria require about a pint of water, imperial measure. Some practitioners employ the decoction of cetraria by itself, others unite it with milk; thus combined, it not only gives tone to the digestive organs, but proves extremely nutritious.

The cetraria islandica and other vegetable tonics may be used in every stage of the disorder, except when peripneumonic symptoms manifest themselves, they are then of course perfectly inadmissible. If the night perspirations be troublesome, a little mineral acid, such as the diluted sulphuric acid, may be added to the tonic mixture or draught employed. The compound infusion of roses, to which a slight addition of acid has been made, is perhaps the most effective tonic which can be prescribed under these circumstances.

Quinine, gentian, [illegible], [illegible], &c., may occasionally be substituted with advantage; but I am not an advocate for the employment of the preparations of iron, or other mineral tonics, in any stage of the disease, in consequence of their stimulating properties.

5. *To Excite a Change of Action.*—I know of no medicine, with the exception of digitalis, which is at all likely to effect a change of action, with a prospect of being beneficial; and even digitalis itself, it must be confessed, is not entitled to much confidence when prescribed with this view.

Is it right to check Diarrhœa in the latter stage of Phthisis?—To this question I may reply that if the diarrhœa be excessive, it is perfectly justifiable to prescribe those medicines which will gently control it, such as small doses of the chalk mixture, to which a little tincture of opium has been added (81), the tincture of catechu, or kino (82), or the infusion of simaruba. In very obstinate cases it may be advisable to re-

(81) ℞ Misturæ Cretæ, ℥v.
Spiritûs Cinnamomi, ♏xx.
Tincturæ Opii, ♏xv. M.
Sumat cochleare magnum, post singulas sedes liquidas.

(82) ℞ Tincturæ Catechu, ℥ij.
——— Opii, ♏xxx.
Aquæ Cinnamomi, ℥x. M.
Sumat cochleare minimum, si opus sit.

sort to the sulphate of copper combined with opium (63).

While I am recommending excessive diarrhœa to be checked, I wish it to be plainly understood that astringents must be used with extreme caution, and not to the extent to produce constipation, otherwise anasarca will invariably supervene and carry off the patient.

Diet.— The diet of the patient must vary with the symptoms. Thus, if it be necessary to bleed the patient, and use other antiphlogistic measures suitable for the subduing of a peripneumonic affection supervening in a case of phthisis, the diet of course must correspond. When there are no signs of inflammation present, and the tubercles are still in the crude state, the diet should be nourishing, but not stimulating. Milk, arrow-root, tapioca, sago, veal, chicken, and mutton-broth, may be allowed the sick. During the period of softening, when signs of great debility are present, a little wine may be prescribed; it (in cases of this description) will be found to increase the strength of the pulse, while it diminishes its frequency.

Change of Climate.—Tubercular disease is decidedly much more frequent in those climates which are for ever varying, than in those in which

(63) ℞ Cupri Sulphatis, gr. ½.
Pulveris Opii, gr. ¼.
Confectionis Rosæ Caninæ, q. s.
Ut fiat pilula, si opus sit sumenda.

sudden changes, either from heat to cold, or from cold to heat, but seldom occur. Consumption is, therefore, far more common in the temperate than in the torrid or frigid zone. This shews the necessity of pointing out to patients, in the early stage of phthisis, the beneficial effects likely to arise from a residence where sudden changes in the weather are rare.

In our own country, such a climate unfortunately can nowhere be found; it will, therefore, be requisite for the patient (if his funds admit of it) to go abroad.

The island of Madeira is, perhaps, more resorted to by phthisical patients than any other place; and, should an eligible spot be fixed upon, sudden changes will but seldom be experienced. Montpellier, Nice, Pisa, Rome, Naples, Florence, and Hyères, have all been strongly recommended as suitable residences for consumptive patients; of these, however, Pisa is to be preferred, at least during the winter months. If a patient cannot leave his native country on account of the "*res angustæ domi*," Torquay, Sidmouth, Penzance, Undercliff in the Isle of Wight, and Clifton, are entitled to his chief consideration.

Although a change of residence from a variable to a less variable climate is exceedingly desirable during the early stages of phthisis, nothing tends so completely to hasten on the fatal termination of the disease as a removal during the period of tubercular softening; and I should therefore strongly advise patients under these circumstances not to leave their homes, their domestic comforts, and their friends, to die away from all those who may be near and dear to them.

Sailing was recommended for phthisical patients by several of the Greek physicians, and has advocates at the present day; it is however, even now undecided whether it has ever been productive of real good.

PART THIRD.

DISEASES OF THE PLEURA.

CHAPTER I.

ACUTE PLEURISY.

Anatomical Characters: False Membranes, Membranous Bands, Fibro-Cartilage, Gangrene of the Pleura — General, Functional, and Local Signs — Double Pleurisy — Occasional Causes — Predisponent Causes — Treatment — Diet.

Anatomical Characters.— The inflamed serous membrane is either studded by a great number of red points, which occupy its entire thickness, or appear seated immediately under it, the intervening spaces retaining their normal hue, or it is of a diffused red colour. The maculated appearance is the result of a transudation of blood after death; for when an inflammation of a serous membrane has been produced artificially, the redness has been invariably uniform. Sometimes, though rarely, the inflamed membrane is slightly thickened.

Inflammation of the pleura is always followed by an effusion of a transparent fluid, generally of a slightly yellow tinge, but occasionally of a reddish hue; this arises from an admixture of blood. The quantity of fluid secreted depends on the severity of the attack: in mild cases, the amount of fluid is trivial; in cases of the opposite description, it is frequently sufficiently great to alter the form of the chest on the affected side. The lung is then compressed and flattened, almost completely destitute of air, and of course unable to perform its functions. The heart, if the effusion be on the left side, may be forced towards the right; if however, the effusion have occurred on the right side, it may be forced still further to the left. The diaphragm has often been impeded in its action by the abundance of the effused fluid, and the stomach and liver have occasionally been forced downwards.

The yellowish coloured transparent fluid described above, after a little time becomes turbid, and minute albuminous filaments make their appearance; these gradually coalesce, and are at last precipitated on the surface of the pleura; a false membrane, as it is termed, is thus formed, its extent always bearing a proportion to the intensity of the inflammation. While these precipitations are going on, the effusion frequently becomes perfectly opaque, and assumes a puriform character.

False Membranes. — False membranes are usually of a yellowish-white colour, soft, and vary in thickness from half a line to two lines. When first deposited, their thickness is always inconsiderable; but they gradually become thicker by subsequent precipitations. Their surface is by no means smooth and uniform; this arises from an unequal deposition of albuminous filaments in different places; sometimes it has an irregular reticulated appearance, and occasionally it seems studded by large granulations.

Membranous Bands.—Membranous bands frequently unite the false membrane covering the pulmonary pleura to the false membrane investing the costal pleura. These bands are perfectly similar in appearance and properties to the false membranes themselves, and like them, after a time, usually become organised, and are finally converted into a substance identical with cellular tissue.

Fibro-Cartilage.—When the false membranes and bands do not pass into the cellular or serous tissue just described, they are for the most part converted into a substance denominated fibro-cartilage, and it is during this transition that the ribs approach each other, and the chest becomes narrowed.

Gangrene of the Pleura.—Inflammation of the pleura sometimes, but very rarely, terminates in gangrene. For the most part, this disease arises from the bursting of a gangrenous abscess of the lung into the pleura; occasionally, it has supervened to a chronic pleurisy.

Gangrene of the pleura is generally of small extent, but cases are sometimes met with, shewing the disease to have been very diffuse. It usually presents itself under the form of circumscribed spots or stains of a dirty brown or green colour, emitting an intolerably fetid odour, closely resembling that of brain in a state of decomposition. The parts involved in the gangrene are soft and pliable, and easily break down under the fingers when handled.

The gangrene is not confined to the pleura, but attacks the false membranes and bands. Sometimes, on the separation of a gangrenous eschar from the pulmonary pleura, a communication is formed between the cavity of the pleura and one or more bronchial tubes; and occasionally, when the costal pleura has been the seat of the disease, the entire parietes of the chest have been perforated.

General, Functional, and Local Signs.—Acute pleurisy is ushered in by febrile symptoms of greater or less intensity, in proportion to the severity of the attack. The shivering at the onset of the disease is usually well marked; this is followed by a severe inflammatory fever.

Pain.—"Elapsis pauculis horis (to use the words of the immortal Sydenham) licet aliquando multo serius ingruat symptoma hoc, æger vehementi dolore, eoque punctorio, in laterum alterutro circa costas corripitur, qui nunc versus omoplatas, nunc spinam, nunc ex adverso versus anteriora pectoris se propagat."[*] There is no doubt that the description just quoted is extremely accurate, but it must not be supposed that pain is a constant symptom in pleurisy. Läennec met even with acute cases where it was wanting,[†] and I have repeatedly seen the effects of intense pleurisy in my post-mortem examination of persons who during life had never complained of any acute pain in the chest.

Whenever pain is present in pleurisy, it is invariably augmented by inspiration, notwithstanding, as Dr. Berends has correctly observed, it is principally performed by the diaphragm.[‡] The pain is also aggravated by coughing; so much so, indeed, that the patient always represses his cough as much as possible; and when he can no longer avoid coughing, he places his hands instinctively on his chest, to render it as immovable as possible; his sufferings are thereby much mitigated.

The pain in pleurisy is generally confined to the seat of the inflammation; it sometimes, however, migrates, and occasionally is met with on the side opposite to that involved in the disease. Cases of the latter description are extremely rare, and can only be accounted for by reference to the sympathy which exists between tissues similarly organised.

---

[*] "Th. Sydenhami Opera Universa Medica." Editionem reliquis omnibus emendationem et vita auctoris auctam curavit C. Gottl. Kühn. 228.

[†] "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 450.

[‡] Dr. C. A. W. Berends, "Vorlesungen über praktische arzneiwissenschaft, herausgegeben." Von Karl Sundelin, M.D. Dritter Band. 211.

Pain is sometimes caused by pressure in the intercostal spaces; this, according to Läennec, arises from a rheumatic complication.

The learned Forbes* differs from Läennec, and informs us that his experience leads him to consider a tenderness of the intercostal spaces on pressure as far from unusual in acute pleurisy.†

It is generally easy to distinguish pleuritic pain from either rheumatic or nervous pain. Rheumatic pain seldom attacks the chest without attacking other parts at the same time; it is also very much increased by calling into action the muscles of the part affected; moreover, it is superficial. Nervous pain is of a darting kind, occurs in paroxysms of very variable duration, and is unaccompanied by fever.

Dyspnœa.—More or less difficulty of breathing invariably attends pleurisy. When this symptom is very distressing, it arises either from the impossibility of fully expanding the chest during inspiration, in consequence of the violence of the pain, or from compression of the lung by the effused fluid.

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 450.

† Note by Dr. Forbes. 450.

In those cases of pleurisy which are complicated by peripneumony—a complication of extreme frequency—dyspnœa is far more severe than when the disease exists in a pure form; it is also exceedingly distressing if pleurisy supervene when a patient is suffering from dry catarrh, or spasmodic asthma.

Cough.—The cough in pleurisy is very variable; it may be altogether absent, or dry, infrequent, and moderate, or of considerable severity; in the latter case, there is generally a catarrhal or peripneumonic complication.

Expectoration.—This is as variable as the cough; if the pleurisy exist in a pure form, it is generally scanty; if a peripneumony be combined with the pleurisy, it is viscid, and of a rust colour; and, lastly, it may exhibit all the characters of the secretion in pituitous and mucous catarrhs, should the complication be a catarrhal one.

Position of the Patient.—If only one side be affected, the patient almost invariably lies on that side; if both, he lies in general with the greatest ease on his back.

Local Signs.—During the first stage of pleurisy, the respiratory murmur on the affected side, is either altogether absent, or heard only very indistinctly. This arises from the almost completely immovable state of the ribs,—a state which prevents the proper dilatation of the air-cells. When effusion takes place, the respiratory murmur is no longer perceptible, except at those parts of the lung situated higher than the effusion, and for about two or three fingers' breadth along the vertebral column. If the fluid be considerable, a dull sound is elicited on percussion.

Œgophony.—This sign was considered by Läennec as pathognomonic of a slight layer of fluid existing between the pleuræ. According to this distinguished physician, œgophony disappears when the extravasation becomes very abundant, but if the fluid remain stationary it may continue several months; after having disappeared, it again reappears, upon the quantity of the extravasation being lessened, and finally goes off entirely when the fluid is absorbed.*

It cannot be doubted by those who are most practised in the difficult art of auscultation, that œgophony may perhaps most frequently be heard in cases of slight pleuritic effusion; but that it is invariably to be distinguished in all cases of this description I most strongly deny; and I also have no hesitation in saying that the phenomenon may be produced without the slightest degree of effusion being discoverable. I feel, indeed, much pleasure in being able to quote Dr. Skoda's words, supporting, as they do, my own opinion:—"Ich muss hier wiederholen," says Dr. Skoda, "dass

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 448.

mir die einfache egophonie Läennec's sowohl bei flüssigkeit in der pleura, als auch ohne alle spur von flüssigkeit in derselben, bei pneumonien, und auch bei infiltration des lungenparenchyms mit tuberkelmaterie, mit und ohne exkavationen im lungenparenchym, vorgekommen ist, dass ich häufig flüssigkeit in der pleura gefunden habe, wo die konsonirende stimme am thorax das zittern oder meckern nicht an sich hatte, das sowohl bei flüssigkeiten im thorax, als bei pneumonien ohne flüssigkeit in der pleura einzelne worte oder sylben der konsonirenden stimme das zittern oder meckern darbieten können, indess andere worte davon gar nichts wahrnehmen lassen."*

Œgophony can therefore no longer be depended on as a means of diagnosis, as it indicates no particular lesion.

Mensuration of the Chest.—When the pleuritic effusion is very abundant, and exists only on one side, it can very easily be detected by simply uncovering the chest, the side affected will appear larger and rounder than the healthy one. If, however, the pleuritic effusion be still abundant, but not sufficiently so to render the different dimensions of the opposite sides of the chest discoverable by mere inspection, it will be advisable to resort to the mensuration of the chest. To effect this properly, an inelastic riband should be provided, divided into inches, halves, and quarters, like a tailor's measure; one end of this riband should be applied to the centre of the ensiform cartilage and passed round to the corresponding spinous process of the dorsal vertebra; the distance between these two points must then be accurately marked; the other side of the chest should now be measured in the same way, and by comparing the result of the two measurements, the exact difference will of course be seen.

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. J. Skoda. 58.

Mensuration is an exceedingly useful means of diagnosis, as it indicates to a very great nicety the degree of effusion. If the difference between the opposite sides of the chest be insignificant, the effusion is inconsiderable; if however, it amount to two inches or more, positive evidence is afforded of its being very great. It is also of great use to measure the chest during the absorption of the fluid, as it gives information relative to the rapidity or slowness of this important process.

Double Pleurisy.—Double pleurisy of an intense character is universally admitted to be an exceedingly rare disease, and when it occurs it usually proves fatal before false membranes have time to form. The general and functional signs are similar to those of single pleurisy, but much more intense: some of the local signs of single pleurisy are unavailable in double pleurisy.

Occasional Causes.—Long-continued exposure to cold, cold with moisture, the suppression of habitual discharges, and the metastasis of cutaneous eruptions, and some other diseases, such as gout and rheumatism, fracture of the ribs, and violent blows on the chest, may be enumerated as the chief occasional causes of pleurisy.

Predisponent Causes.—A malformation of the chest, the existence of tubercles in the lungs, the immoderate indulgence of spirituous liquors,—in a word, whatever tends to debilitate the constitution may become a predisponent cause of pleurisy.

Treatment.—1. Blood-letting; 2. Counter-irritation; 3. Calomel and opium; and 4. Digitalis—are the remedial agents most to be trusted, in the treatment of pleurisy. In the stage of effusion Paracentesis Thoracis must occasionally be performed.

Blood-letting.—There is no disease in which blood-letting is of greater service than pleurisy. It ought invariably to be abstracted in the way pointed out by one of the most celebrated of British physicians,—I mean Dr. Marshall Hall.* The rules laid down by this original thinker will also prove excellent guides as relate to repetitions of the operation. In very severe cases, the quantity of blood required to be abstracted is really enormous, often amounting to seventy or eighty ounces in the course of twenty-four hours.

After the first general bleeding, blood ought to be abstracted topically, by means of cupping or leeches. If cupping should be preferred, the operation should never be performed on the anterior part of the chest, on account of the difficulty which is sometimes experienced of stopping the hæmorrhage—a fact already noticed. There are several great advantages which cupping has over leeches, when the operation is performed scientifically, such as the quickness with which blood may be removed, and the ease with which the exact quantity required to be taken away, may be abstracted.

---

* Dr. Hall's method has already been referred to in a former part of this work.

2. *Counter-irritants.*—Counter-irritants are of great use in pleurisy after blood-letting. The best counter-irritant is the common blister; it should be applied (at all events in the first instance) over the seat of the inflammation. In those diseases of the respiratory organs in which the ribs move freely, the application of a blister to the chest is extremely painful, and this is the principal reason why it is usually applied, by our continental brethren, to some distant part, such as the thigh. In pleurisy, however, the pain of a blister is inconsiderable, as the ribs of the affected side are invariably immovable.

The tartar emetic ointment and croton oil liniment, before spoken of, may occasionally be employed with advantage in pleurisy, after the subsidence of the chief inflammatory action, should the application of a blister be objected to.

3. *Calomel and Opium.*—There are no diseases

which are so completely under the control of calomel and opium as inflammatory affections of serous membranes. Immediately, therefore, after the abstraction of blood, the calomel and opium may be commenced, and repeated every two hours till the inflammation abate. Two grains of the former, and from a sixth to a fourth grain of the latter, are the proportions most suitable when the doses are administered thus often. If the case be not so severe as to demand such frequent repetitions of the medicine, the dose of the opium may advantageously be increased, as it will tend to alleviate the pain.

Should any circumstance arise to prohibit the employment of opium, the strong mercurial ointment, or mercurial liniment, must be substituted for the calomel, as few adult persons are found able to bear calomel without the protective influence of the opium.

In whatever manner mercury has been introduced into the system, whether in the form of pill, ointment, or liniment, it is found that, as soon as the mouth is affected, the inflammatory symptoms disappear.

4. *Digitalis.* — Digitalis is of considerable utility in the treatment of inflammatory diseases; but it is especially indicated in those cases of pleurisy in which, from some peculiarity of constitution, not a particle of mercury can be borne. It reduces the force and frequency of the pulse, and considerably alleviates the sufferings of the patient.

Paracentesis Thoracis.—This operation requires to be performed in those cases in which the cavity of the pleura is enormously distended with fluid, and the dyspnœa extremely urgent. Medicines, in cases of this description, are perfectly unavailing, in consequence of the pleura being invested with a false membrane,—a membrane always inorganic, when first formed, and therefore ill adapted to absorb the fluid effused.

To perform this operation the patient should be seated in a chair, and the skin over the intercostal space, between the sixth and seventh rib, of the affected side, and as near its centre as possible (unless the matter point elsewhere), should be drawn upwards, so as to form afterwards a valve; a straight double-edged knife is now to be passed at the upper edge of the seventh rib, through the integuments, intercostal muscles, pleura, and false membranes, into the cavity containing the matter. On the withdrawal of the knife the matter flows out. There is scarcely ever occasion to pass (as is the practice with some surgeons) an elastic gum catheter into the cavity; and I must protest against the almost entire evacuation of the matter at one time, for I have known so great a shock produced on the constitution by this practice, as to terminate fatally within a few hours from the performance of the operation. When, however, the matter is evacuated gradually—that is to say, when from ten to twelve, or sixteen ounces, are abstracted every day, or every other day, the chances of recovery are very considerable.

In the year 1838 I was requested to see a patient who was suffering from a very severe attack of pleurisy. In spite of the most active treatment an enormous effusion took place on the left side. The thigh sound was, of course, elicited on percussion. The left side measured nearly two inches more than the right, and there was a pointing of matter in the intercostal space, between the left sixth and seventh ribs. A small valvular opening was made into the pleuritic cavity, and about sixteen ounces of pus evacuated, which afforded the patient great relief; the opening was then carefully closed with adhesive plaster, and a bandage applied round the chest. The next day a little more pus was discharged; the day following still more; and so on, till the purulent matter was completely evacuated. This process occupied, from first to last, several weeks. The patient's strength was supported by a generous diet and tonic medicines, and he ultimately recovered.

I will now relate a case shewing the danger of evacuating a large quantity of purulent matter at once.

In the year 1829, a case very similar to that just mentioned came under the care of a friend of mine, a distinguished hospital surgeon. This gentleman drew off at one time, in my presence, no fewer than seventy-two ounces of pus; the wound was then carefully closed, and the chest bandaged. The operation was performed about two o'clock P. M. The patient, for several hours afterwards, appeared more cheerful, breathed with much greater ease, and seemed to be in all respects better. A little after eleven o'clock of the same day, without any previous complaint, he uttered a piercing shriek, threw back his head, and instantly expired.

Diet.—The diet of the sick during the acute stage of pleurisy, must be of the most antiphlogistic character, all stimulants being carefully avoided. When the inflammatory symptoms have subsided, a more generous diet may be allowed.

CHAPTER II.

PLEURO-PERIPNEUMONY.

Pleuro-Peripneumony, varieties of—1. Peripneumony complicated with a slight Pleurisy; 2. Pleurisy complicated with a slight Peripneumony; 3. Pleuro-Peripneumony, in which both Affections exist nearly in an equal degree—General, Functional, and Local Signs—Treatment.

Having treated of peripneumony and pleurisy at considerable length as they exist in a separate or independent state, we are now prepared to enter on the consideration of these diseases when they are combined. Läennec pointed out three varieties of this double inflammation: 1. Peripneumony complicated with a slight pleurisy; 2. Pleurisy complicated with a slight peripneumony; 3. Pleuro-peripneumony, properly so called, in which both affections exist in a nearly equal degree.*

1. *Peripneumony complicated with a Slight Pleurisy.*—Whenever peripneumony exists in a violent degree, and reaches the surface of the lung, the contiguous pleura inflames, and a false membrane is formed; this membrane is extremely thin.

---

* "A Treatise on the Diseases of the Chest," &c. By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 487.

Sometimes the costal pleura, opposite to the inflamed pulmonary pleura, participates in the inflammatory action, and also forms a false membrane.

2. *Pleurisy complicated with a slight Peripneumony.*—This complication arises after a severe pleuritic attack; accompanied by an abundant effusion. The lower lobe of the lung is the one almost always the first affected, and the inflammation is of that variety denominated lobular. Läennec has admirably described the anatomical characters of the parts of the lung involved in the second stage of the inflammation, or stage of hepatization. According to this distinguished writer, "the hepatized parts are here in the first instance much more flabby and less solid than in simple peripneumony, and become converted into a substance completely resembling, both in appearance and consistence, muscular flesh, which has been beaten to make it tender."*

3. *Pleuro-Peripneumony, properly so called, in which both affections exist in nearly an equal degree.*—This variety is more rare than the others, and, according to Läennec, less dangerous.

General, Functional, and Local Signs.—The general, functional, and local signs of these three varieties are common with those of peripneumony and pleurisy, and therefore do not require repetition. It may be observed, however, that it is sometimes almost impossible to distinguish between an hepatized lung and a moderate effusion into the cavity of the pleura, if the physician be not acquainted with the previous history of the case. Should ægophony be present, he must be extremely cautious in attributing it to an effusion, for it has been already stated that it may exist without it, and *vice versâ.* Should it be absent, it might lead to a serious error to suppose that an effusion did not exist. Again, a patient may be suffering from peripneumony in the first stage without a crepitant rattle becoming manifest, this fact has also been before alluded to, and ought to be continually borne in mind. The signs, therefore, of pleuro-peripneumony are by no means so certain as are generally imagined, and a prudent physician will not give an opinion concerning the variety of pleuro-peripneumony which may be present until he have submitted the patient to a most rigid examination, and even then, the diagnosis should be pronounced with extreme caution and reservation, for the signs will sometimes fail to clear up the precise nature of the case.

---

* "A Treatise on the Diseases of the Chest," &c. By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 489.

Treatment. — The treatment of pleuro-peripneumony should, if possible, correspond with the variety which may be present; thus, if the peripneumony be the best marked, the remedies suitable for the successful combating of this affection should be vigorously employed; if, on the other hand, the disease partake more of pleurisy than peripneumony, the measures recommended under the head of pleurisy must be adopted.

CHAPTER III.

HYDROTHORAX.

Hydrothorax, division into, 1. Idiopathic Hydrothorax; 2. Symptomatic Hydrothorax — Anatomical Characters — General, Functional, and Local Signs — Treatment.

Hydrothorax, or water in the chest, has been divided by recent pathologists into two varieties, viz. 1. Idiopathic Hydrothorax; 2. Symptomatic Hydrothorax.

With regard to the first variety, or idiopathic hydrothorax, it is admitted by all physicians to be a disease of great rarity, and I candidly confess that I have as yet never seen a single specimen of it, the knowledge therefore which I possess of this disease is entirely borrowed from the writings of others.

Anatomical Characters.— 1. *Idiopathic Hydrothorax.*— This disease seldom exists on both sides of the chest at the same time, the effusion of serum being confined for the most part to the cavity of the pleura on one side. On examining the pleura, it appears perfectly healthy, no trace of disease presenting itself. The lung is pressed towards the mediastinum and is destitute of air.

2. *Symptomatic Hydrothorax.*—This form of water in the chest is as common as the idiopathic is the reverse. The pleuræ generally appear healthy, sometimes, however, they are studded with red patches, which are evidently the result of inflammatory action. The disease, under these circumstances, should of course be considered as a combination of symptomatic hydrothorax and acute pleurisy.

General, Functional, and Local Signs. 1. *Idiopathic Hydrothorax.*—This variety is unattended by any marked general symptoms; the functional relate principally to the difficulty of breathing, and the local signs are nearly the same as in pleurisy with effusion.

2. *Symptomatic Hydrothorax.*—The general signs of symptomatic hydrothorax are extremely variable; this is owing to the vast number of diseases which may give rise to the effusion. Thus, if it be produced by heart disease, than which nothing is more common, the general signs of the lesion, in which the heart is involved, will be present, and so on with the rest of the organs. Symptomatic hydrothorax frequently appears towards the close of chronic diseases,—such as cancer, enlargement of the liver and spleen, and announces the speedy dissolution of the patient. When this is the case, it is almost always combined with anasarcous symptoms.

The functional and local signs, relative to the pleuritic effusion, correspond, of course, with those of idiopathic hydrothorax. The other functional and local signs will vary with the disease which has given rise to the effusion.

Treatment.—Too little is known of the cause which gives rise to idiopathic hydrothorax, to speak very positively of the most eligible mode of cure; but, perhaps, if a case should occur, without the possibility of ascertaining in what manner it originated, it would be the safest plan to attack it by purgatives, diuretics, and blisters.

Symptomatic hydrothorax is perfectly incurable, unless it be possible to remove the cause from which it derived its origin; for, as fast as the fluid is removed, it would re-accumulate. When, however, it is possible to combat successfully the primary disease, the hydrothorax will speedily disappear, under a suitable course of medicine. I may again remind the reader that, if the urine of the patient be albuminous, digitalis will prove extremely useful, either by itself, or united with spirit of nitric æther and vinegar of squill; if, however, this state of the urine do not exist, mercury may advantageously be employed, or the case may be treated by purgatives,—the best of which is, cream of tartar united with jalap, or elaterium, where it agrees.

CHAPTER IV.

PNEUMO-THORAX.

Preliminary Observations—Anatomical Characters—Causes—General, Functional, and Local Signs—Treatment.

This disease, although by no means rare, passed almost unnoticed till the celebrated French pathologist, Itard, published his inaugural thesis upon it.

Anatomical Characters. — These must vary with the disease from which it derives its origin. The air contained in the pleuritic cavity may be almost inodorous; it is then, in all probability, little else than atmospheric air, which has passed from the bronchial tubes into the cavity of the pleura, by means of a communication existing between them; or it may be exceedingly fœtid, having the smell of sulphuretted hydrogen; this is never the case unless there have been a pleurisy, to a greater or smaller extent, effusion of blood, or gangrene, and evidently arises from a decomposition of the fluids effused. I have sometimes thought that the pleura has the power, under peculiar circumstances, of secreting air, and of giving rise to pneumo-thorax. I formed this opinion in consequence of this disease occasionally existing, without any perceptible alteration, in the pleuritic membrane.

Causes.—I have already stated, that pleurisy, effusion of blood, and gangrene, may be causes of pneumo-thorax; this disease may be also produced by a fall on the chest rupturing the air-cells, and thus causing an extravasation of air into the pleura, and the bursting of softened tubercular matter into the pleuritic cavity and bronchial tubes simultaneously.

General, Functional, and Local Signs.—The general signs of pneumo-thorax must vary with the cause which has given rise to the affection. The functional relate to the cough and dyspnœa.

Cough.—When the disease exists in an idiopathic form, this sign is absent; if, however, the disease be of a secondary character, the cough may be extremely distressing; this of course depends on the nature of the primary malady.

Dyspnœa.—The dyspnœa is always severe, its severity being invariably in proportion to the quantity of aeriform fluid contained in the pleuritic cavity, and the extent and nature of the lesion complicating the pneumo-thorax.

If the chest be percussed when the pleuritic cavity contains only a moderate quantity of aeriform fluid, the sound will be clearer than usual, and tympanitic; if, however, the walls of the chest be much distended, the sound elicited on percussion is but little or not at all tympanitic. Dr.

Skoda, referring to this point, says, "Ist jedoch die brustwand sehr gespannt, so ist der perkussionsschall wenig, oder gar nicht tympanitisch."* When the chest is percussed in cases of pneumothorax, the operation must be performed with the greatest care, otherwise it will lead to error, and the young auscultator should be extremely cautious, lest he consider the side yielding the clearest sound as perfectly healthy, while it in fact is that involved in the disease.

If a pneumo-thorax exist only on one side of the chest, the diagnosis is in general easy, for the diseased side will sound (as I before observed, except in cases of very great distension of the walls of the chest) clearer than usual on percussion, and the respiratory murmur will either be totally lost, or extremely feeble, while on the sound side it will become puerile. The feebleness or complete absence of the respiratory murmur on the diseased side depends solely on the compression of the lung by air, and is not, as supposed by Martinet, owing also to the bad sound-conducting power of the air effused in the pleuritic cavity,† for it was shewn, under the head of Peripneumony, that air conducted sound more perfectly than either fluids or solids.

---

* "Abhandlung über Perkussion und Auskultation." Von Dr. Joseph Skoda. 250.

† "Manual of Pathology," &c. By L. Martinet, D.M.P. Translated by Jones Quain, M.B.

If, on the other hand, a pneumo-thorax be double, the diagnosis is often, as is acknowledged by the best of auscultators, extremely difficult; and Läennec confesses that he had seen many cases of this disease in the dead body, when its existence had not been suspected during the lifetime of the patient.* Every physician accustomed to make post-mortem examinations must acknowledge the truth of this statement.

Treatment.—The treatment must in all cases depend on the cause which has produced the disease.

---

* "A Treatise on the Diseases of the Chest." By R. T. H. Läennec, M.D. Translated by J. Forbes, M.D. 505.

CHAPTER V.

PNEUMO-THORAX WITH EFFUSION.

Preliminary Observations—Signs: 1. Absence of the Respiratory Murmur; 2. Hippocratic Fluctuation—Treatment.

THIS variety of pneumo-thorax is by no means uncommon.

When the disease exists only on one side, it may be distinguished by the following signs.

1. *Absence of the Respiratory Murmur.*—The respiratory murmur is entirely absent, except at the root of the lung, and the sound elicited by percussion when the patient is in the upright position is dull at the lower part of the thorax, corresponding with the liquid effusion. If the fluid poured out be very considerable, the dull sound will not only be perceived at the lower parts of the chest, but as high as the fluid extends. At the upper parts of the chest the sound is clearer than in the normal condition.

By requesting the patient to lie down, the liquid and air will change their position; the liquid of course will gravitate to the lower parts of the chest, while the aeriform fluid will occupy the superior parts. On percussion, the part which before yielded a dull sound will now emit a tympanitic, and *vice versâ*.

2. *Hippocratic Fluctuation.*—Succussion has been practised from the days of Hippocrates to the present time, and is decidedly a most valuable means of ascertaining the presence of fluid in the cavity of the chest, when combined with air. If the air be only small in quantity, the sound emitted by succussion will be feeble; if, on the other hand, it exist in abundance, the sound will be very considerable.

The operation of succussion may be performed without occasioning much annoyance to the patient, by placing him in a chair, and shaking his shoulder quickly once or twice, and then suddenly ceasing. In this way the fluid will be agitated, and emit a sound pretty closely resembling that produced by shaking a bottle partly filled with water.

When the sound is feeble, it will be necessary either to apply the ear to the chest at the moment of performing the operation, or else employ the stethoscope; the ear is to be preferred, as it is difficult to keep the stethoscope accurately applied to the thoracic walls during succussion. When, on the contrary, the sound is loud, and the operation judiciously performed, it may be heard some distance from the patient.

If a large tubercular excavation exist half filled with water, succussion may give rise to the sound just described. This might induce the physician to think that the fluid was contained in the cavity of the pleura; a careful inquiry into the previous history of the case would, however, in all probability, prevent the possibility of an error of this sort.

The "tintement métallique" and "bourdonnement amphorique" do not, as asserted by Läennec and his disciples, indicate the presence of fluid and air, either in the pleuritic cavity or tubercular excavation; for, as I have before demonstrated, these sounds may exist without the presence of fluid.

Treatment.—The physician can in general do little more in the treatment of pneumo-thorax with effusion, than smooth the way to the grave, as the disease is almost always incurable.

THE END.

LONDON:
PRINTED BY MOYES AND BARCLAY, CASTLE STREET, LEICESTER SQUARE.